CCD-V900E

SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model

video Hi8 Handycam

U MECHANISM

SPECIFICATIONS

System

Video recording system	Rotary two heads, Helical scanning FM system
Audio recording system	Rotary head, FM system
Video signal	PAL colour, CCIR standards
Usable cassette	8 mm video format cassette
Tape speed	SP: Approx. 20.051 mm/sec. LP: Approx. 10.058 mm/sec.
Recording time	SP mode: 1 hour 30 min. LP mode: 3 hours (E5/P5–90)
Playback time	SP mode: 1 hour 30 min LP mode: 3 hours (E5/P5–90)
Fast forward/rewind time	Approx. 7 min. (E5/P5–90)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (black and white)
Lens	Combined 8 × power zoom lens f = 11–88 mm, F1.4 with macro Filter diameter: 52 mm
Auto focus system	TTL
Colour temperature	Auto One push white balance INDOOR 3,200 K OUTDOOR 5,800 K
Minimum illumination	5 lux (F1.4)
Illumination range	5 lux–100,000 lux (0.5–9,294 footcandles)
Recommended illumination	More than 300 lux (28 footcandles)
Aperture correction	Automatic, manual (variable)

Input and output connector

Video output	Phono jack, 1 Vp-p, 75 ohms unbalanced, sync negative	
S video output	4-pin mini-DIN Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative Chrominance signal: 0.300 Vp-p, 75 ohms, unbalanced	
Audio output	Phono jack, −7.5 dBs, loaded by 47 kilohms, output impedance less than 2.2 kilohms	
RFU DC OUT	Special minijack, 5V DC	
Video input	Miniphono jack, 1 Vp-p, 75 ohms, unbalanced, sync negative	AUS/E Model
S video input	4-pin mini-DIN Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative Chrominance signal: 0.300 Vp-p, 75 ohms, unbalanced	
Audio input	Miniphono jack, −7.5 dBs, input impedance more than 47 kilohms	
Earphone jack	Minijack, 8-ohm impedance	
Remote jack	Stereo mini-minijack	
MIC jack	Minijack, −66 dBs, low impedance With 2.5–3 V DC output, impedance 6.8 kilohms	
Microphone power output jack	Special minijack, 5 V DC	

— continued on next page —

VIDEO CAMERA RECORDER

SONY®

General

Power requirements	Battery compartment 6.0 V (battery pack)/7.5 V (AC power adaptor)/9.0 V (alkaline battery)
Power consumption	7.9 W (camera recording) including the viewfinder
Installation	Vertically, horizontally
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	−20°C to +60°C (−4°F to +140°F)
Dimensions	Approx. 126 × 136 × 352 mm (w/h/d) ($5 \times 5^{3}/_{8} \times 13^{7}/_{8}$ in.) Including the lens hood
Weight	Approx. 1.5 kg (3 lbs 5 oz) excluding the battery and cassette
Microphone	Electret condenser microphone

Design and specifications are subject to change without notice.

Note
This appliance conforms with EEC Directives 76/889 and 82/499 regarding interference suppression.

- The following units are supplied with the CCD-V900E video camera recorder.
  - Battery pack NP-77
  - AC power adaptor AC-V30
  - RFU adaptor and antenna selector
  - Screwdriver (AEP/UK MODEL)
  - Shoulder strap
  - Cassette tape
  - Lens cap
  - Lithium battery CR2025
  - AV connecting cord (2 phono to 2 phono)
  - Video cable (for S video connection) (4-pin mini-DIN to 4-pin mini-DIN)

  For details on these units, please read their instruction manuals.

This unit uses 8mm video format cassettes. It records in the SP mode (approximately 20.051mm/second) and the LP mode (approximately 10.058mm/second) and can play back in the SP mode and the LP mode.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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The colour reproduction standard frame is contained after the adjustment elements location of camera adjustment parts.

SERVICE MODE :

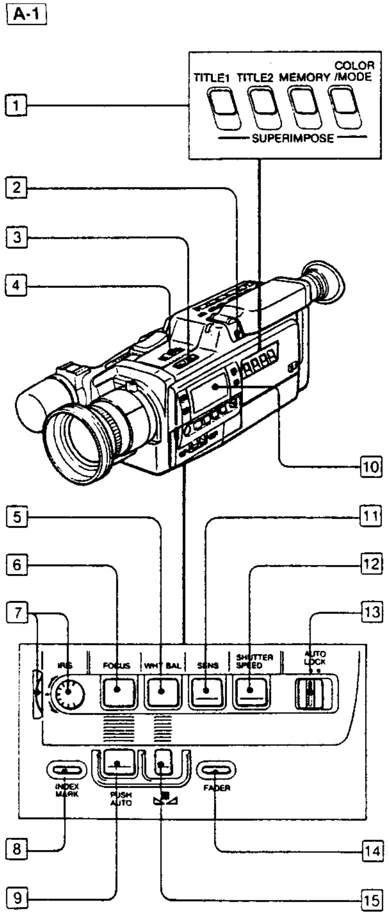
In this instrument, service mode is provided in orders to know the set status and for the electric adjustment of camera. This operation in made by full remote control (RM-95 partically product).

- For adjustment of EVR (Electronic Variable Resistor) of camera.
  ....ADJUST MODE →Refer to page 208.
  (8-2-3. Adjustment
  Remote Control)
- For checking the set status
  ....STATUS INFORMATION MODE (STATUS MODE)
  →Refer to page 265.
  (10. SERVICE MODE)

SECTION 1
GENERAL

This section is extracted from instraction manual.

1-1. LOCATION AND FUNCTION OF PARTS AND CONTROLS



For details on the use of each control, refer to the pages indicated in the circle.

A-1

1 **SUPERIMPOSE buttons ㊳**
Used to record the title.
TITLE 1 button
TITLE 2 button
MEMORY button
COLOR/MODE button

2 **PUSH SLIDE button ⑲**
Press to adjust the position of the viewfinder.

3 **EDITSEARCH button ⑲, ㉒, ㊸**

4 **POWER switch**
CAMERA: For camera recording
PLAYER: For playing back or editing tapes
OFF: Power off

5 **WHT BAL (white balance) button ㉗**
Used for manual white balance adjustment.

6 **FOCUS button ㉕**
Used for manual focusing.

7 **IRIS control ㉙**
Normally set to the center position (green mark).

8 **INDEX MARK button ㉓**
Press to mark the index signal **during recording.**

9 **PUSH AUTO button ㉖**

10 **Display window**

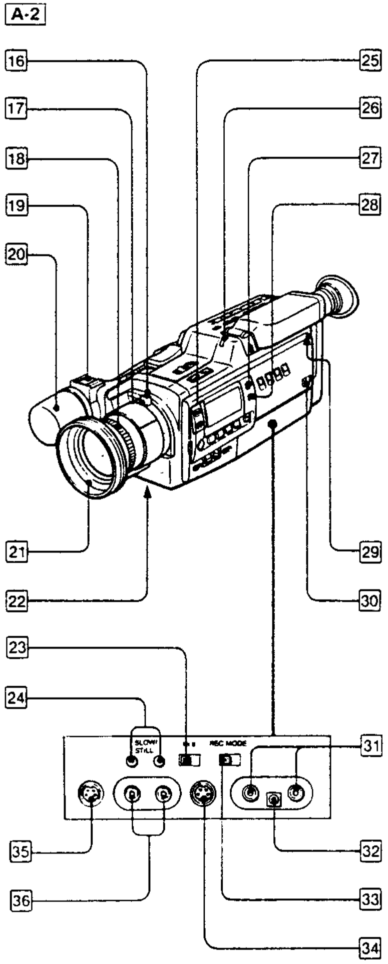
11 **SENS (sensitivity) button ㉚**
Press when the scene to be recorded is too dark.

12 **SHUTTER SPEED button ㉛**
Used to select the shutter speed.

13 **AUTO LOCK switch ⑯, ⑱**
Normally set to the left AUTO LOCK position (green mark).
To adjust the focus, white balance, iris, sensitivity or shutter speed manually, set to the right position (white mark).

14 **FADER button ㊷**

15 **(one push white balance) button ㉘**
Press to adjust the white balance presicely.



• **Note**
• AUS/E Model only

35 S VIDEO INPUT connector (4-pin mini-DIN)

36 VIDEO/AUDIO IN (input) jacks (phono jacks)

A-2

16 **Macro set button ㉞**

17 **Zoom lever ㉝**

18 **Focus ring ㉕**

19 **Accessory shoe**
Attach a video light, etc.

20 **DUAL CAPSULE MIC (microphone)**
Select the appropriate function according to the shooting conditions.

21 **Lens hood**

22 **START/STOP button ⑳**
Used for low position recording.

23 **Hi8 (high eight) mode switch ⑰, ⑱**
When set to the AUTO (green mark) position, the recording mode will be selected automatically according to the tape to be used.

24 **SLOW/STILL ADJ (adjust) buttons (51)**

25 **DATE and TIME buttons ㉟**
Press to display or turn off the date or time.

26 **Camera recording/battery/tape end lamp**
Lights during camera recording. It blinks when the battery is exhausted or the tape is at its end.

27 **ZERO MEM (zero memory) button ㊸**
Used to memorize the counter zero point.

28 **COUNTER RESET button ㊸**
Press to reset the counter to zero.

29 **RELEASE button ❼**
Press to remove the eyecup.

30 **BATT (battery eject) knob ⑩**

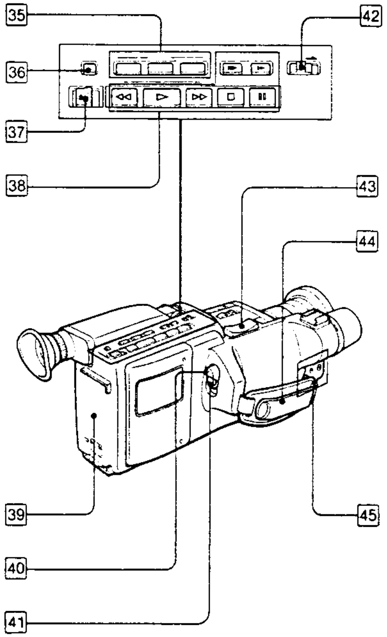
31 **VIDEO/AUDIO OUT (output) jacks (phono jacks)**

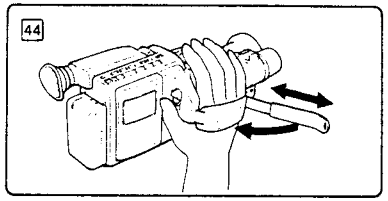
32 **RFU DC OUT (RFU adaptor DC output) jack (special minijack)**
Supplies power to the RFU adaptor.

33 **REC MODE selector**

34 **S VIDEO OUTPUT connector (4-pin mini-DIN)**

A-3





A-3

35 INDEX buttons (52)
INDEX: Press to search the index signal marked.
MARK: Press to mark the index signal.
ERASE: Press to clear the index signal.

36 DATA SCREEN button (51)
Press to display the indication on the viewfinder screen on the TV.

37 EJECT (cassette eject) button

38 Tape transport buttons
▷ (playback)
►► FF (fast forward)
◄◄ REW (rewind)
■ (stop)
❚❚ (pause)
❚► SLOW (slow speed playback)
❚❚► FRAME (frame-by-frame playback)

39 Battery mounting surface

40 STANDBY switch
Slide up to set the unit to recording pause mode.

41 START/STOP button ⑱
Press to start and stop camera recording.

42 EDIT switch ⑱
Normally keep this switch at the left position. When editing a tape, set to the EDIT position.

43 Variable power zoom button ㉝

44 Grip strap
Adjust the length so that your thumb can easily manipulate the START/STOP button.

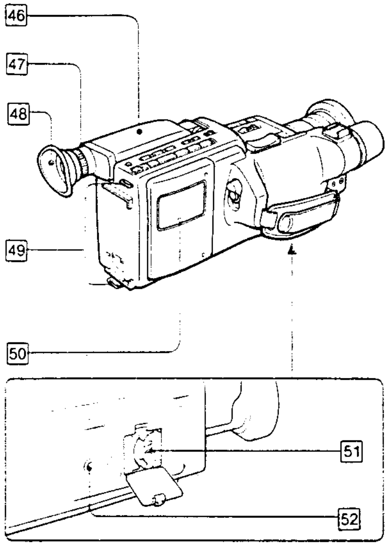
45 BUILT-IN MIC (microphone) SELECT switch
Normally set to the Hi-Fi (green mark) position.

EXT MIC (external microphone) and DC OUT (microphone power output) jacks
Connect an external microphone.
The EXT MIC jack accepts Sony "plug-in-power" microphones and supplies power to them.

REMOTE connector

👂 (earphone) jack

A-4



A-4

46 Viewfinder
The picture being recorded or played back can be monitored in monochrome here. Also, data such as caution indicators and function mode are displayed on the viewfinder screen.

47 Viewfinder lens adjustment ring
Adjust to your eyesight to assure good focus. Be sure to adjust this ring when shooting for the first time.

48 Eyecup

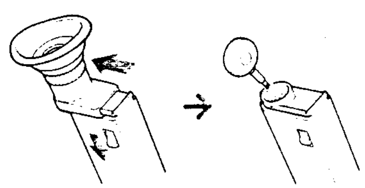
49 Hooks for shoulder strap
Attach a shoulder strap.

50 Cassette holder

51 Lithium battery compartment

52 Tripod receptacle

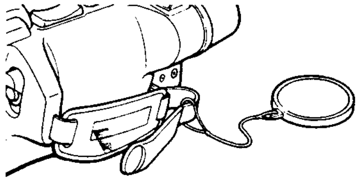
A-5



A-5

To remove dust from inside the viewfinder
While pressing the RELEASE button, slide the eyecup to the left.

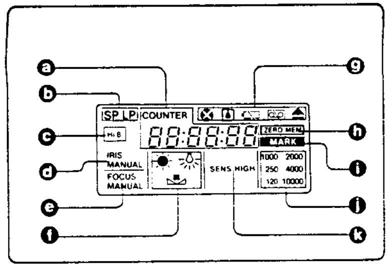
A-6

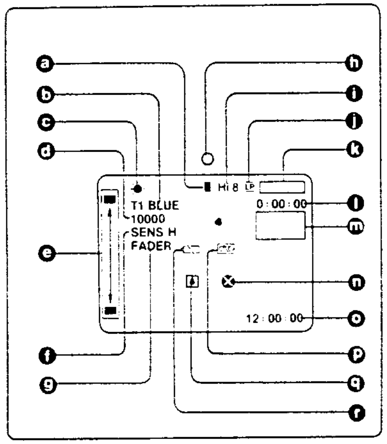


A-6

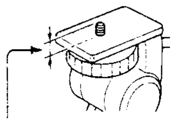
Lens cap
Hang the lens cap on the grip strap.

A-7





A-8



A-7

Indications in the display window

ⓐ Time/date/counter indication
ⓑ Tape speed indication
ⓒ High eight mode indication
ⓓ IRIS MANUAL indication
ⓔ FOCUS MANUAL indication
ⓕ Lights when the white balance is adjusted manually
ⓖ Caution indications
ⓗ ZERO MEM (memory) indication
ⓘ Lights when the index signal is marked.
ⓙ Shutter speed indication
ⓚ SENS HIGH indication

Indications inside the viewfinder

ⓐ Lights when the focus is adjusted manually
ⓑ Title number and colour indication
ⓒ Lights when the white balance is adjusted manually.
ⓓ Shutter speed indication
ⓔ Lights when the iris is controlled manually
ⓕ Lights when the SENS button is pressed
ⓖ FADER indication
ⓗ Camera recording lamp
ⓘ High 8 mode indication
ⓙ Indicates the recording mode
ⓚ In the VTR operation mode, this indicates the tape transport function.
ⓛ Tape counter
ⓜ ZERO MEM/INDEX MARK/ERASE/SCAN indication
ⓝ Caution indication
ⓞ Date/time
ⓟ Tape indication
ⓠ Dew indication
ⓡ Battery indication

A-8

Note when attaching a tripod not manufactured by Sony

When attaching a tripod not manufactured by Sony, the length of the camera mounting screw must be less than 6.5mm. Otherwise the screw may damage the inner parts of the camera.

1-2. POWER SOURCES

Selection of Power Sources

This manual shows the operations on one of the following power sources.

		Power source	Accessory to be used
Place	Outdoors	Battery pack	Battery pack NP-77 or NP-55 (page 10) Battery case EBP-55 (page 11)
	Indoors	House current	AC power adaptor AC-V30 or AC-V55
	In the car	12 V or 24 V car battery	DC pack DCP-55

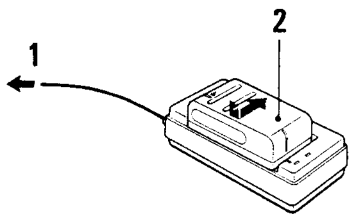
Notes on power source

- Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted cassette tape. If this is done by accident, supply the power again immediately and turn on the power switch.
- Be careful not to let any metal object touched on the metal part on the battery pack or AC power adaptor. When the battery pack is not to be used, keep it in its case.

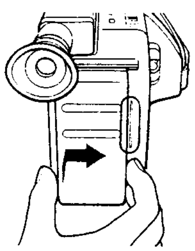
Optional Accessories for Charging

- **AC-V55 AC power adaptor**
  Two battery packs can be charged simultaneously.
- **BCA-70 or BCA-80 battery charge adaptor, ACP-88 AC pack and NPA-55 battery adaptor**
  For charging, insert an NP-55 into the NPA-55.

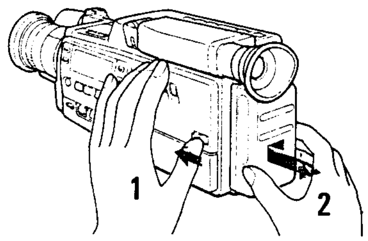
B-1



B-2



B-3



Battery Pack — NP-77 or NP-55

First, charge the battery pack. B-1
Use the AC-V30 AC power adaptor.
The charging time is about 2 hours for an NP-77 battery pack, or about 1 hour for an NP-55 battery pack.

1 Connect the AC-V30 to a wall outlet.
2 Attach the battery pack to the AC-V30. Align the grooves on the battery pack with those on the AC-V30, and while pressing the battery pack, slide it as illustrated until it locks.

To attach the battery pack to the video camera recorder B-2
Align the right side of the battery pack with the line on the recorder, and while pressing the battery pack, slide it to the right.
Make sure that the battery is fitted completely to the mounting surface. Imperfect fit may damage the projections on the recorder.

To remove the battery pack B-3
While pressing the BATT knob in the arrow direction, slide and pull out the battery pack as illustrated.

Battery life
A fully-charged NP-77 battery pack provides approximately 50 minutes of continuous camera recording, and an NP-55 provides approximately 25 minutes of continuous camera recording.

> When the video camera recorder is not in use, remove the battery pack.
> If the battery is installed, even if the POWER switch is set to OFF, a very small amount of electric current flows.

When the battery becomes weak
The 🔋 indication blinks inside the viewfinder and in the display window.
Replace the battery pack with the fully charged one.

Notes
- The video camera recorder consumes power even in the recording pause mode. When recording short scenes using the recording pause mode, the battery life is less than half that of continuous recording.
  When recording is not to be started soon, turn off the power with the STANDBY switch.
- If the battery pack is not fully charged or if it is used in a cold place, its operating time is also shortened.

Using the NP-22 battery pack
A fully-charged NP-22 battery pack can operate this unit for approximately 40 minutes. For using the NP-22, an optional NPA-22 battery adaptor is necessary.

Battery Case — EBP-55

You can operate the recorder on the battery case.

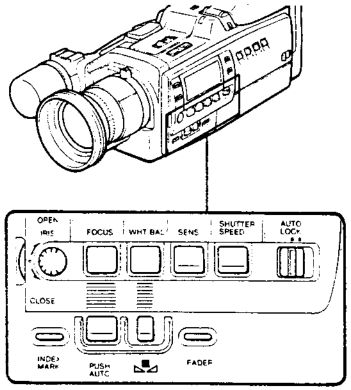
Battery life
The EBP-55 provides approximately 25 minutes of continuous indoor camera recording.

Notes on the battery case
- Be sure to use the alkaline batteries.
- The battery case cannot be used in a cold place.
- The 🔋 indication may not blink when the batteries in the battery case become weak, as the voltage of the battery lowers suddenly. If the cassette compartment does not open, replace the batteries.

For details, see the instruction manual of the EBP-55 battery case.

1-3. SELECTION OF THE AUTOMATIC AND MANUAL ADJUSTMENTS

C-4



Function of the AUTO LOCK Switch

When the AUTO LOCK switch is set to AUTO LOCK (green mark), the iris, focus, white balance, sensitivity and shutter speed (1/50) are adjusted automatically. But under certain circumstances, manual adjustment is better for effective recording. C-4

When the AUTO LOCK switch is set to the right position (white mark), each manual function works as follows.

IRIS See page 29.	• When the shooting subject is too dark, turn to OPEN. • When the shooting subject is too bright, turn to CLOSE. • Even if the AUTO LOCK switch is set to the right, when it is set to the green mark, the auto function will work.
FOCUS See page 24.	No indication (Auto) – ■ (Manual) Each push of the button sequentially changes the function.
PUSH AUTO See page 26.	When this button is kept depressed, it activates auto focusing in the manual focusing mode.
WHT BAL See page 27.	No indication (Auto) – ◣■◢ – ☀ – ⁘ Each push of the button sequentially changes the function.
◣■◢ See page 28.	When the WHT BAL is set to ◣■◢, the white balance is adjusted manually.
SENS See page 30.	Press to get high sensitivity.
SHUTTER SPEED See page 31.	No indication (1/50) – 1/120 – 1/250 – 1/1000 – 1/2000 – 1/4000 – 1/10000 Each push of the button sequentially changes the function.

Notes

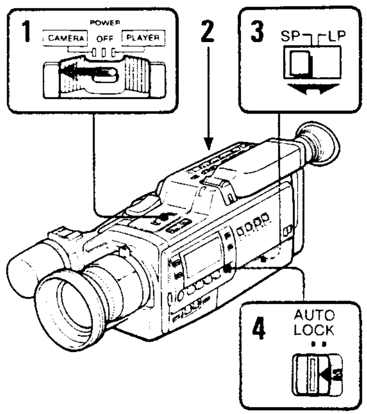
- Just after the battery pack is attached to the recorder, even if the AUTO LOCK switch is set to the right position, the AUTO LOCK function will work.
  But the IRIS is set to the condition just before the battery is removed.
- If the AUTO LOCK switch is set to AUTO LOCK after each function is adjusted manually, and then set to the right position again, the previous manual setting will be recalled.

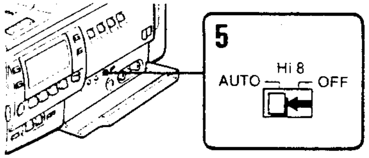
Function of the Hi8 Mode Switch

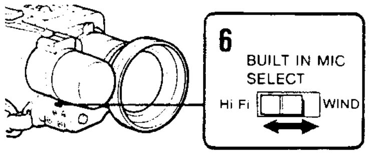
When the Hi8 mode switch is set to AUTO, the recording mode is selected automatically.
  For Hi8 video system tape: Hi8 mode recording
  For standard 8mm tape: Normal mode recording
When a tape for the Hi8 video system is used for normal recording, set the Hi8 mode switch to OFF.

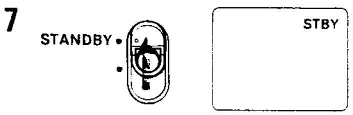
1-4. EASY CAMERA RECORDING WITH AUTOMATIC ADJUSTMENT

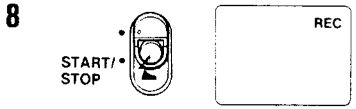
D-1











How to Record

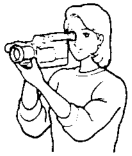
D-1

1. While pressing the small button, set the POWER switch to CAMERA.
2. Insert the cassette.
3. Set the REC MODE selector to LP or SP, according to the length of the programme to be recorded.
4. Set the AUTO LOCK switch to AUTO LOCK (green position).
5. Set the Hi 8 mode switch to AUTO (green mark).
6. Set the BUILT-IN MIC SELECT switch.
   Hi-Fi: For indoor recording, or outdoor recording when there is no strong wind. Hi-fi sound can be recorded.
   WIND: For outdoor recording when the wind is strong. The effects of noise from the wind will be decreased.
7. Slide the STANDBY switch up.
   The unit will enter the recording pause mode.
8. Press the START/STOP button.
   Recording will start.

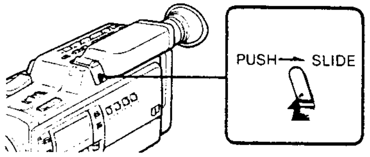
Check on the viewfinder screen
STBY: Displayed during recording pause mode.
REC: Displayed during recording.

To stop recording
Press the START/STOP button again.
The unit will enter the recording pause mode.
Avoid rough handling or mechanical shock to the unit. A smooth transition between scenes may not be made.

D-2



D-3



To check the last portion of the previous recording

1 Set the recorder in recording pause mode by pressing the START/STOP button.
2 Press the – ⊜ EDITSEARCH button momentarily.

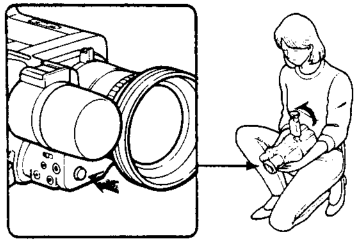
The last few seconds of the recorded portion are rewound and then the recorded picture is monitored on the viewfinder screen. The unit then enters the recording pause mode.

If the picture has not been recorded
The video head may be contaminated. Clean the heads using the Sony V8-25CLH video head cleaning cassette.

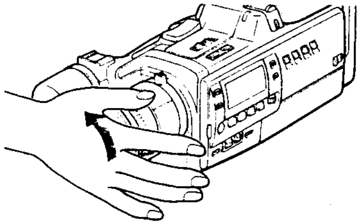
After using
Slide the STANDBY switch down and set the POWER switch to OFF. (You need not press the center button when setting the switch to OFF.)

Hold the camera recorder as in the illustration. D-2
If your nose touches the recorder, adjust the position of the viewfinder. The viewfinder can be set to one of three positions, while pressing the PUSH SLIDE button. D-3

D-4



D-5



D-4

For low position recording
The viewfinder can be turned 90 degrees up.

1 Slide the STANDBY switch up.
2 Press the START/STOP button on the front.

When attaching the lens hood, filter or conversion lens, hold the focus ring.

When removing, press it with the palm of your hand and turn it counterclockwise. D-5

Note on power source
If the POWER switch is moved during recording, the tape will stop.

Notes on light sources

- Should you shoot a subject in bright conditions such as sunlight just after shooting in a dark place, the picture may not appear on the viewfinder screen. In this case, move the camera away from the subject to resume the normal condition.
- A vertical band may appear when a subject such as a candle flame or a light is shot against a dark background.

Notes on automatic adjustment

- During recording with auto focusing, do not turn or stop the focus ring forcibly.
- Keep the lens clean.

The camera recording with automatic adjustment may not produce optimum results under certain conditions. In this case, manually adjust the focus, white balance, sensitivity and iris. See pages 24, 27, 29 and 30.

Indications inside the Viewfinder or in the Display Window

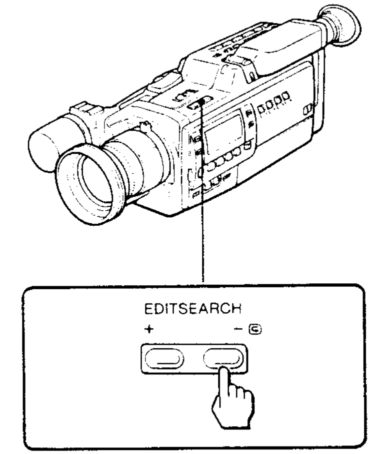
Indications for caution

▭	Slow blinking • The battery is weak. Fast blinking • The battery is exhausted.
⊡	Slow blinking • The tape is near its end. • No cassette is inserted. Fast blinking • The tape is at its end.
⏏	Blinking • A fault has occurred in the unit.
⊗	Blinking • The gap of the head is clogged. (Head contamination)
◙	Blinking • Moisture has condensed inside the unit.

Indications showing the function in use

▮	• Lights when the focus function has been set to the manual mode. • Blinks when the auto focus function does not work due to low light or low contrast.
STBY, REC, PLAY, PAUSE, ◀◀, ▶▶, II▶, SLOW, STILL	Lights to show tape transport functions in the VTR operation mode.
INDEX MARK	• Blinks when the MARK button is pressed in the recording pause or playback pause mode. • Lights when the index signal is being marked.
INDEX ERASE	• Lights when the index signal is being erased.
INDEX SCAN, INDEX SEARCH	Lights when the index signal is being scanned.
☼ , ⁂ , ⊡	Lights when the white balance function is set to manual. ☼ Outdoor, ⁂ Indoor, ⊡ One push white balance
⊡	Blinks when the one push white balance is not set.
○	Lights in red during recording

D-6



Instant Playback on the Spot (D-6)

You can monitor the picture just recorded on the viewfinder screen.

1. While pressing the small button, set the POWER switch to CAMERA.
2. Slide the STANDBY switch up.
3. Keep pressing the "−" side of the EDITSEARCH button to view the playback picture in reverse.
4. Keep pressing the "+" side of the EDITSEARCH button to view the playback picture.

During Recording, to Record Again on the Previous Recorded Portion (Editsearch 1)

1. Slide the STANDBY switch up.
2. Monitor the picture on the viewfinder screen and locate the point from which the recording is to begin again with the EDITSEARCH button.
   Keep pressing the "+" side of the EDITSEARCH button to advance the picture at a normal playback speed, or the "−" side to reverse the picture.
3. At the desired point, release the EDITSEARCH button.
   The unit will be set to recording pause mode.
4. Press the START/STOP button to start recording.

Smooth recording can be made even if the recording is stopped and started again, or even if the power is turned off and on again, provided that the cassette is not removed. But, if the cassette has been removed, proceed as above.

To monitor the sound while viewing the playback picture on the viewfinder screen

Connect an earphone to the Ⓔ jack.

1. While pressing the small button, set the POWER switch to PLAYER.
2. Press the ◀◀ button to rewind the tape.
3. Press the ■ button to stop the tape.
4. Press the ▶ button to start playback.

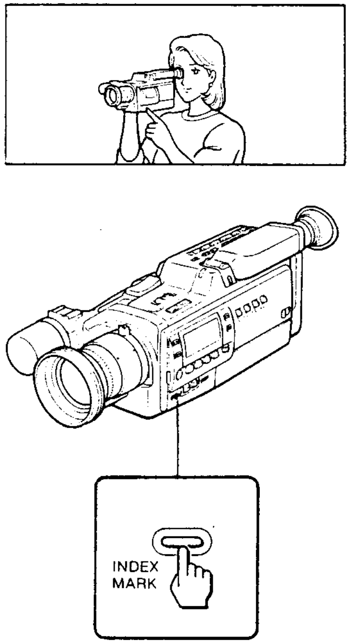
To stop the playback, press the ■ button.

Note

To record smoothly, turn off the STANDBY switch when changing the battery.

1-5. TO MARK INDEX SIGNALS DURING RECORDING

D-7



The desired programme can be easily located by an index signal marked on the tape.
Press the MARK button at any desired point on the tape during recording. D-7

When the index signal is marked in the recording pause mode (the MARK indication blinks), the index signal will be marked just after the recording pause mode is released.

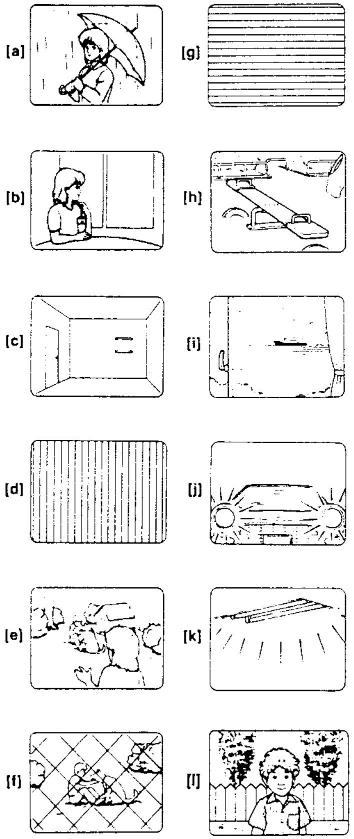
For other index operations, see page 52.

Notes

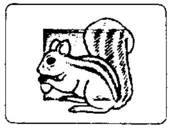
- The index signals can be marked at any desired point. But make sure there is more than 2 minutes of space between two index signals. If there is more than one index signal marked within an interval of 2 minutes at the normal tape speed, the unit may not function properly.
- The INDEX MARK indication disappears automatically.
  Continue to record until the INDEX MARK disappears so that the recorded index signal can be searched correctly in the playback mode.

1-6. MANUAL FOCUSING

E-1



E-2



Use manual focusing when shooting subjects difficult to focus automatically.

Poor Conditions for Auto Focusing E-1

[a] Insufficient light
[b] Too much bright light behind the subject
[c] Subjects with flat colours and less contrast — wall, sky, etc.
[d] Finely detailed repetitive patterns
[e] When the distance between subjects at the center is extreme (e.g. one subject is close, the other is away)
[f] Subjects beyond screens, nets, etc. or when another subject passes across the camera
[g] Horizontal stripes
[h] Diagonal object
[i] When there is frosted glass between the shooting object and the recorder
[j] Bright object or object reflecting light
[k] When shooting under a fluorescent lamp at the shutter speed set to 1/250, 1/1000, 1/2000, 1/4000, 1/10000.
[l] Strong contrast behind the subject

Other Uses of Manual Focusing

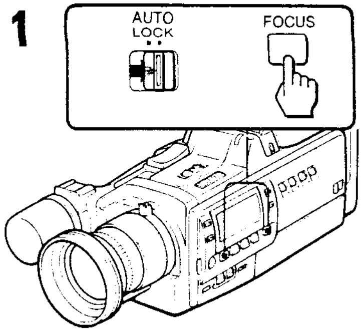
- When the white mark inside the viewfinder blinks
- When using special effects lenses or filters
- When shooting still subjects on a tripod
- To save battery wear
  (When the AUTO LOCK switch is set to AUTO LOCK, the auto focusing operates to move the focus ring automatically even in recording pause mode. This causes the battery to wear continuously.)
- For focusing in close-up shooting, see page 34.

Auto focusing system

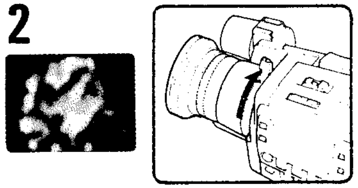
The auto focusing system incorporated in this unit utilizes high-precision sensors to determine picture contrast at the center of the viewfinder screen (the blue portion marked in the illustration) and adjust focus accordingly for automatic, highly accurate focusing E-2

E-3

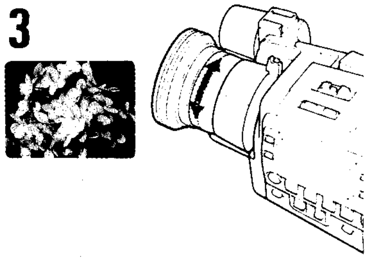
1



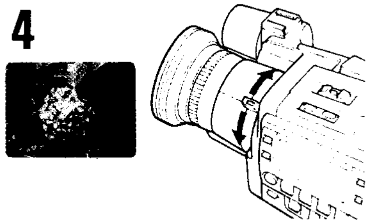
2



3



4



Notes

Auto focus does not function momentarily in these cases:

- When the shutter speed or the white balance is changed
- When the iris is being adjusted
- When lighting conditions change quickly
- When the zooming is changed from wide-angle to telephoto
- When the sensitivity is changed.

It may take several seconds to get focus when the camera is rapidly panned from a distant subject to a near subject with less contrast. In this case, adjust the focus manually.

Note on automatic adjustment

While recording with the auto focusing function, do not touch the focus ring forcibly.

To Focus Manually E-3

1 Set the AUTO LOCK switch to the right position and press the FOCUS button.
The white mark (■) will be shown in the viewfinder.
2 Turn the manual zoom lever to the telephoto position (88) to make the subject as large as possible in the viewfinder.
3 Turn the focus ring to achieve sharp focus.
4 Set the desired shot length using the manual zoom lever.

Some helpful hints

- When shooting a scene with lots of movement in bright light, the subject can be kept in good focus by setting the zoom lever to the wide-angle position and the focus ring to 2 m, regardless of the distance between the subject and the recorder.
- When shooting in low light situations such as indoors, the depth of field in proper focus is very shallow. For best results, shoot at wide angles, after focusing in telephoto.
- The figures on the focus ring indicate the distance between the subject and the ⊕ mark on the recorder.
- Recommended illumination of this unit is more than 300 lux (28 footcandles). If shooting is done indoors or under other circumstances where light is insufficient, video lights must be used for best results. Under adequate light condition, the depth of field in proper focus is wider and a sharper picture will be recorded.

When the auto focusing is adjusted to the background

To adjust for the central subject, first shoot the near subject or set the focus ring to 1.3 m manually, and then set the AUTO LOCK switch to AUTO LOCK or press the PUSH AUTO button.

When the auto focusing is adjusted to the near object

To adjust for a distant view, first shoot the distant view or set the focus ring to ∞ manually, and then set the AUTO LOCK switch to AUTO LOCK or press the PUSH AUTO button.

It may take several seconds to get proper focus in following cases:

- When recording in low light conditions.
- When recording a face close-up.
- When recording still objects on a tripod.
- When panning or tilting shots are repeated.

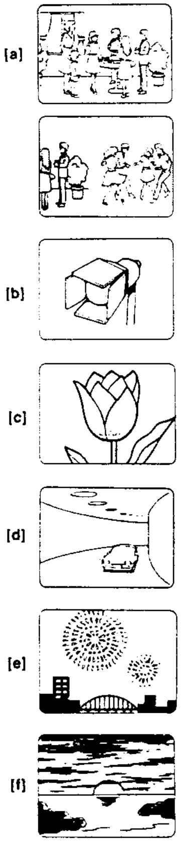
Adjust the focus manually and press the PUSH AUTO button.

Quick Focus Adjustment

Press the PUSH AUTO button during recording in the manual focusing mode. Auto focusing will be activated only when the PUSH AUTO button is kept depressed.

1-7. MANUAL WHITE BALANCE ADJUSTMENT

F-1



In most cases, the auto white balance function of this unit operates automatically. However, if it does not work correctly in the conditions listed below, adjust the white balance manually.

Difficult Conditions for Auto White Balance F-1

[a]	When lighting conditions change quickly	⁖
[b]	When the light source for the subject is different from that illuminating this unit, such as when the subject is in a spotlight, etc.	⁖
[c]	When shooting a monochromatic subject or the background is monochromatic	⊡
[d]	• When recording under a sodium lamp • When recording under a mercury lamp • When recording under a white fluorescent lamp	⁖
	When recording under a colour matching fluorescent lamp	☀
[e]	When recording outdoors, such as a night view, neon sign or fireworks	☀
[f]	When recording outdoors, such as scenes after sunset or scenes before sunrise.	☀

To Adjust the White Balance Manually

1 While pressing the small button, set the POWER switch to CAMERA.
2 Slide the STANDBY switch up.
3 Set the AUTO LOCK switch to the right position.
4 Select the desired white balance mode by pressing the WHT BAL button.
Each push of the WHT BAL button cyclically changes the indication inside the viewfinder.

No indication (Auto) → ⊡ → ☀ ——┐
• ———————— ⁖ ————————┘

For the colour temperature and the white balance adjustment.

To adjust the white balance precisely

1 While pressing the small button, set the POWER switch to CAMERA.
2 Set the recorder to the manual focusing.
3 Slide the STANDBY switch up.
4 Press the WHT BAL button to indicate the ⊡ mark inside the viewfinder.
5 With the supplied white lens cap on the lens, point the recorder at a light source (indoors) or a subject (outdoors).
6 Press the ⊡ button. The ⊡ mark lights up.
If the ⊡ mark does not light, adjust the white balance automatically.
This function will be kept memorized for about 1 hour after the power is turned off.

When recording in studio light or video light

Press the WHT BAL button so that the ⁖ mark lights up. The ⁖ mark position has been set so as to adjust the white balance according to studio lights or video lights.

When recording in fluorescent light

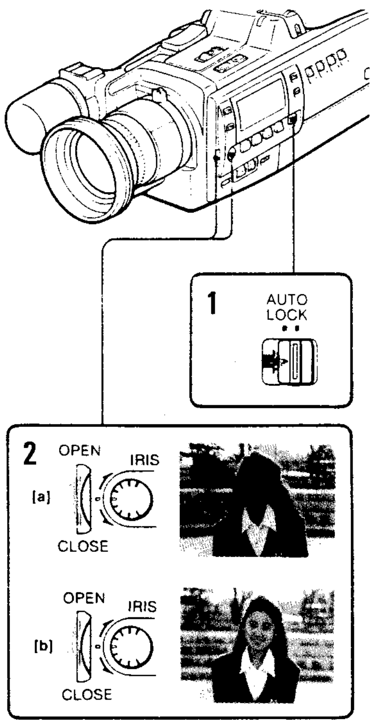
Use the AUTO or ⊡ mode to adjust the white balance precisely.

Notes

- When the light source is changed, reset the ⊡ mode again.
- When the one push white balance is adjusted for low light situations or without the white lens cap on the lens, even if the ⊡ button is pressed, the ⊡ indicator does not light up.
- The ⊡ button does not function during recording.
- The white balance is related to iris and shutter speed adjustment. When the iris or shutter speed is adjusted manually, if the recorder is moved indoor to outdoor or vice versa, set the AUTO LOCK switch to AUTO LOCK and reset it to the right position again.
- When the recorder has been moved indoor to outdoor, or vice versa, or when the battery has been changed, slide the STANDBY switch up and point the recorder to a white object for about 10 seconds so that the white balance is adjusted properly.

1-8. MANUAL IRIS ADJUSTMENT

F-2



The iris is adjusted automatically when the AUTO LOCK switch is set to AUTO LOCK (green position). When shooting a scene with strong contrast, adjust the iris manually.

1 Set the AUTO LOCK switch to the right position (white mark).
2 Adjust the IRIS control.
  [a] When backlit shot results in the subject being too dark: **Turn IRIS toward OPEN.**
  [b] When a subject is too bright against a dark background: **Turn IRIS toward CLOSE.**

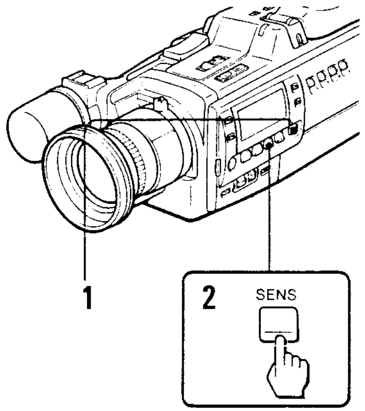
After shooting that particular scene, set the IRIS control to the center position (green mark) or set the AUTO LOCK switch to AUTO LOCK.

Note

Avoid pointing the recorder at the sun with the IRIS control set to OPEN.

1-9. SENSITIVITY IMPROVEMENT

F-3



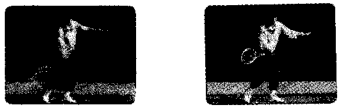
When the entire scene is too dark and the subject is not clear, adjust the sensitivity. F-3

1 Set the AUTO LOCK switch to the right position (white mark).
2 Press the SENS button.
  The SENS H indicator appears on the viewfinder screen.

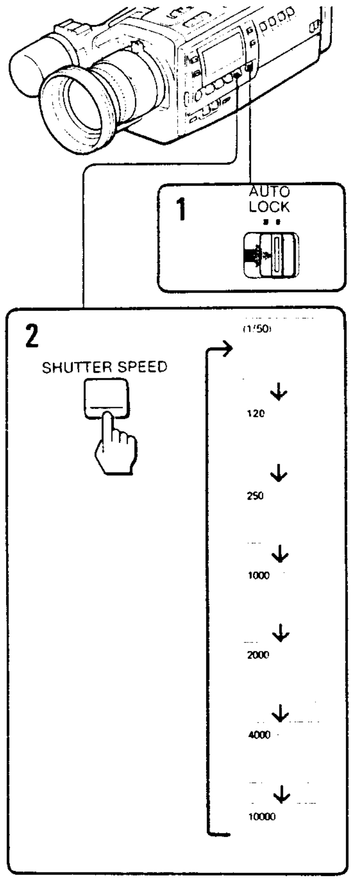
After shooting that particular scene, press the SENS button again or set the AUTO LOCK switch to AUTO LOCK.

1-10. SHUTTER SPEED ADJUSTMENT

G-1



G-2



When a fast-moving subject is recorded at a normal shutter speed, its still picture may not be seen clearly when played back G-1. This can be improved by increasing the shutter speed.
The shutter speed of this unit can be selected from seven speeds, 1/50 (normal speed), 1/120, 1/250, 1/1000, 1/2000, 1/4000 or 1/10000 second.
However, when the shutter moves fast, it will not allow enough light to come into the lens, so the picture will be dark. Therefore, when recording at a high shutter speed, record in a brighter place than usual.
Choose an appropriate shutter speed according to the place and situation.
See the chart below for examples.

Example use	Recommended shutter speed
• On clear days, recording golf or tennis scenes (To view the hit ball clearly in the pause mode, set to 1/10000 or 1/4000) • Recording the skiers	1/10000, 1/4000 or 1/2000
• On overcast days, recording a moving merry-go-round or jet-coaster • Recording outdoors from inside a vehicle (for stable shooting)	1/1000 or 1/250
• Instead of the ND2 filter (To reduce the exposure level to approx. 1/2) • Recording indoors (for stable shooting)	1/120

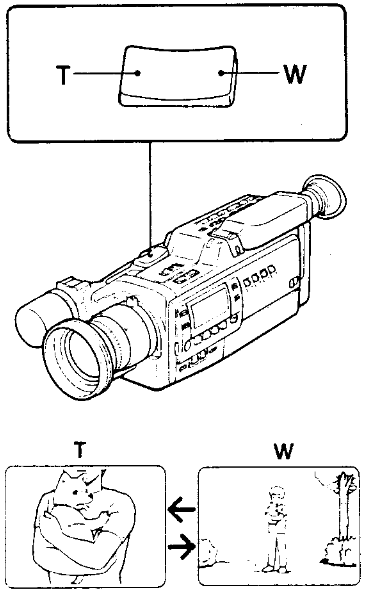
G-2

1 Set the AUTO LOCK switch to the right position.
2 Press the SHUTTER SPEED button repeatedly until the desired shutter speed indication appears on the viewfinder screen.
Each time the SHUTTER SPEED button is pressed, the indication changes:

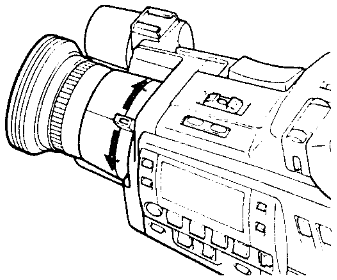
No indication → 120 → 250 → 1000 → 2000 → 4000 → 10000
(1/50) (1/120)(1/250)(1/1000)(1/2000)(1/4000)(1/10000)

1-11. ZOOMING

H-1



H-2



The size of the subject in the scene can be changed.

Power Zoom H-1

— for smooth and constant zooming

Press the T side of the power zoom button for telephoto and the W side for wide-angle.
The zoom ring will move automatically.

The zooming speed is faster when the power zoom button is pressed firmly, and slower when the button is pressed lightly.

Manual Zoom H-2

— to create a dramatic effect

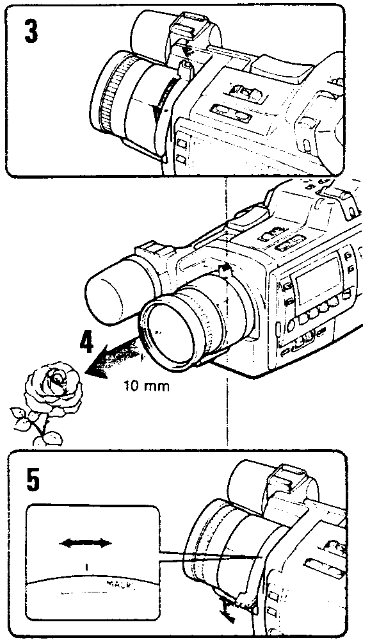
Turn the manual zoom lever upward for telephoto and downward for wide-angle.

For more zooming effect

- Use an optional conversion lens.
  Auto focus, however, will not function in that case.
- The focal length of this unit is 11 mm to 88 mm. Converted into the focal length of a 35 mm camera, this means approximately f-44 mm to 352 mm.
- The zooming speed cannot be changed by the optional Remote Commander.

1-12. CLOSE-UPS (MACRO)

I



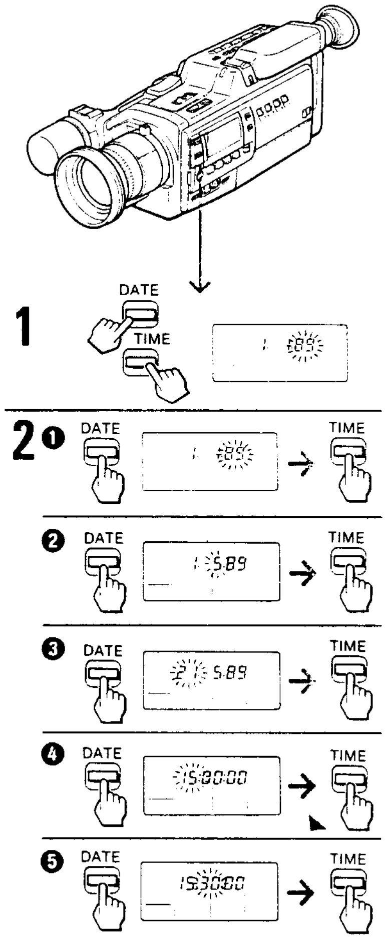
Even tiny objects can literally fill the screen for dramatic close-up effects.
Remove the lens hood before operation.

1. Set the AUTO LOCK switch to the right position.
2. Press the FOCUS button so that the white mark appears in the display window.
3. Turn the zoom lever to the MACRO position, pressing the macro set button.
4. Bring the recorder as close as necessary to obtain the desired subject size.
   The subject can be as close as approximately 10 mm (13/32 in.) from the lens surface.
5. Turn the zoom lever within the MACRO range to focus sharply. (The power zoom button can be used instead of the zoom lever.)

Notes
- Auto focusing does not function properly in macro shooting.
- If the subject is closer than 10 mm, it cannot be brought into focus.
- When shooting in macro, the depth of field is very shallow, so pay attention to focus. To keep the subject in focus, use a tripod or monopod.

1-13. RECORDING DATE OR TIME

J-1



Once the date and the current time are adjusted, the date or time can be recorded together with the picture.

Before setting the date and time, make sure that the power source and lithium battery are installed.

To Set Date and Time J-1

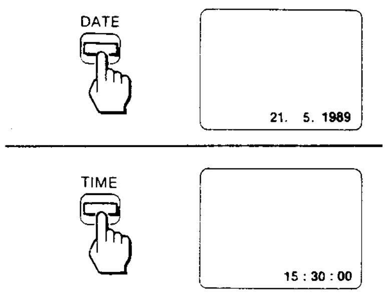
1. Press the DATE and TIME buttons simultaneously **for more than 3 seconds.**
   The date indication will appear in the display window (date/time setting mode).
   The DATE button now functions as the + button and the TIME button functions as the next button.
2. Adjust the ❶ year, ❷ month, ❸ day, ❹ hour and ❺ minute in sequence, following the illustration.
   First adjust the blinking digits with the DATE button, and then press the TIME button.
   After adjusting the minute digits, press the TIME button at the same time with an announced time signal.

The clock starts operating. There is no need to readjust the date and time as long as the lithium battery remains.

To clear the time indication from the display
Press the TIME button again.

The DATE button can be pressed in two ways
- When you keep the button pressed, the digits will advance continuously.
- When you press and immediately release the button, the digits will advance by one

J-2



To check the preset date or time
Press the DATE or TIME button in the recording pause mode. When the same button is pressed again, the indication goes off.

To readjust an incorrect date or time
Set the unit to date/time setting mode and press the TIME button repeatedly until the incorrect digit blinks. Correct it with the DATE button and press the TIME button. After adjusting the minute digits, press the TIME button at the same time with an announced time signal.

Note
The date and time cannot be set during recording. If the recorder is set to the recording mode while setting the date and time, the setting mode will be released.

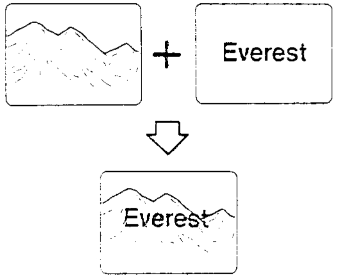
To Record the Date or Time J-2

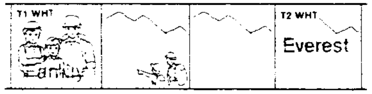
During camera recording or in recording pause mode, press the DATE or TIME button to display the date or time on the viewfinder screen. The date or time being displayed will be recorded together with the picture.

To stop recording the date or time
Press the DATE or TIME button again. The picture recording will continue.

1-14. RECORDING A TITLE

K-1





Before recording, memorize a title or figure. The memorized title or figure is superimposed onto the picture being recorded. K-1

- Two kinds of titles or figures can be memorized.
- The colour of the title or figure can be selected from 8 colours.

Make sure that the lithium battery is installed.

Preparations

To make a desired title card

- Use a white and plane card and draw the title on it with a deep colour (black is recommended for the best result) in thick letters. If contrast is clear, a signboard can be memorized like the title card.
- When deciding the title size, check the effective picture size on your video monitor.

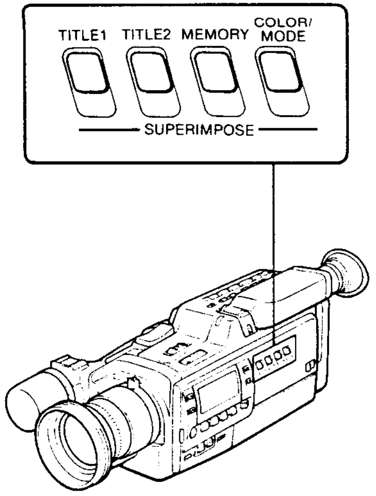
Before memorizing a title

- Fix the title card and the video camera recorder.
- Use of an appropriate light is recommended for a better result.

Function of the COLOR/MODE button
This button is used to select the title colour or title mode.

When the title is displayed	When the title is not displayed
Used as the COLOR button.	Used as the MODE button.
WHT → BLUE → GRN → CYAN (white) (green) BLK ← YEL ← VIO ← RED (black) (yellow) (violet)	No title mode ↑ → 🅃 → 🅃 ↑ ↑ : title scroll mode 🅃 : title reverse mode 🅃 ↑ : title reverse and scroll mode
Each push of the COLOR/MODE button cyclically changes the colour or mode.	

K-2



To Memorize the Title K-2

1. While pressing the small button, set the POWER switch to CAMERA.
2. Slide up the STANDBY switch to set the unit in the recording pause mode.
3. Point the camera to the title card and adjust the focus.
4. Press the TITLE 1 or 2 button.
5. Press the MEMORY button to memorize the title.
6. Select the title colour while observing the colour indication in the viewfinder. Each push of the COLOR/MODE button cyclically changes the colour, as follows:

WHT (white) → BLUE → GRN (green) → CYAN
↑ ↓
BLK (black) ← YEL (yellow) ← VIO (violet) ← RED

7. Press the TITLE 1 or 2 button (pressed in step 4) to turn off the title.

Notes

- The colour indication in the viewfinder is not recorded on the tapes.
- You can change the title colour even after starting the recording.

To check the title

To check the memorized title, press the TITLE 1 or 2 button. To turn off the title, press the button again.

To Record the Title

To record the title from the beginning

Press the TITLE 1 or 2 button in recording pause mode, and then start recording.

To record during camera recording

Press the TITLE 1 or 2 button at the point from which the title is to be inserted.
The memorized title will be recorded together with the picture.

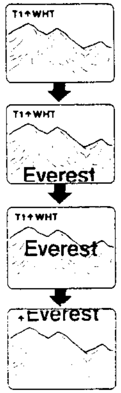
To stop recording the title

Press the TITLE 1 or 2 button again. The picture recording will continue.

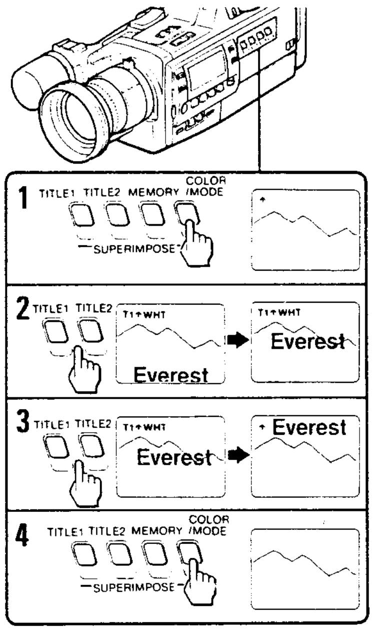
To record the same title several times

By repeating the above procedure, you can record the title as many times as desired.

K-3



K-4



To Scroll the Title from Bottom to Top

During recording, the memorized title can be scrolled from bottom to top. K-3

To check the scrolled title K-4

1. In the recording pause mode, press the COLOR/MODE button.
   The arrow mark will be displayed.
2. Press the TITLE 1 or 2 button.
   The title will be displayed from bottom to center.
3. Press the TITLE 1 or 2 button again.
   The title will be displayed from center to top.
4. Press the COLOR/MODE button **three times.**
   The arrow mark will disappear.

To record the scrolled title

1. In the recording pause mode, press the COLOR/MODE button.
   The arrow mark will be displayed.
2. Start the camera recording.
3. Press the TITLE 1 or 2 button at the point from which the scrolled title is to be recorded.
4. After the title stops at the center of the picture, press the TITLE 1 or 2 button again.
   The title is scrolled from center to top.

To clear the scroll mode

After recording, press the COLOR/MODE button **three times.**

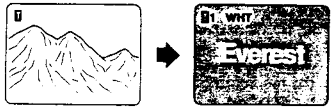
If you do not want to record the picture for the background

Point the recorder to a white, flat object such as a white wall, paper, etc.

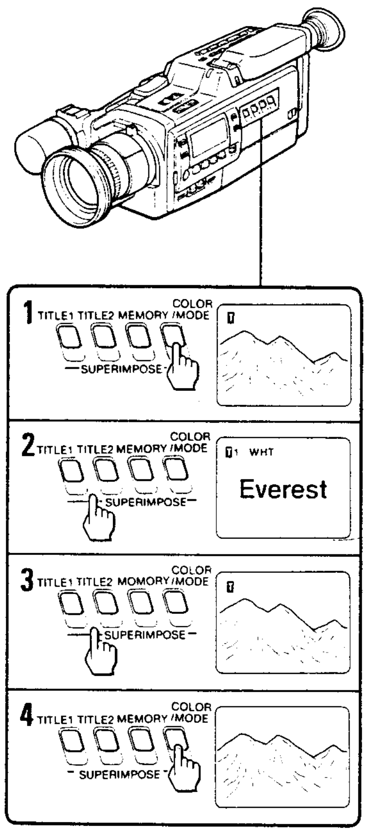
To change the colour of the title

While the title is being scrolled or displayed at the center, press the COLOR/MODE button.

K-5



K-6



To Reverse the Title and the Background

The colour scheme of the title and the background can be reversed. K-5

To check the reversed picture K-6

1 In the recording pause mode, press the COLOR/MODE button **twice.**
The T mark will be displayed.
2 Press the TITLE 1 or 2 button.
The reversed title and background will be displayed.
3 Press the TITLE 1 or 2 button again.
4 Press the COLOR/MODE button **twice.**
The T mark will disappear.

To record the reversed picture from the beginning

1 In the recording pause mode, press the COLOR/MODE button **twice.**
The T mark will be displayed.
2 Press the TITLE 1 or 2 button.
3 Start the camera recording.
4 Press the TITLE 1 or 2 button again to clear the reversed picture.

To record the reversed picture during recording

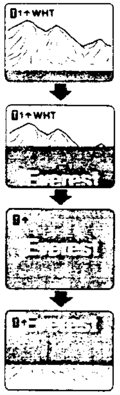
1 In the recording pause mode, press the COLOR/MODE button **twice.**
The T mark will be displayed.
2 Start the camera recording.
3 Press the TITLE 1 or 2 button at the point from which the reversed picture is to be recorded.
4 Press the TITLE 1 or 2 button again to clear the reversed picture.

To clear the reverse mode
After recording, press the COLOR/MODE button **twice.**

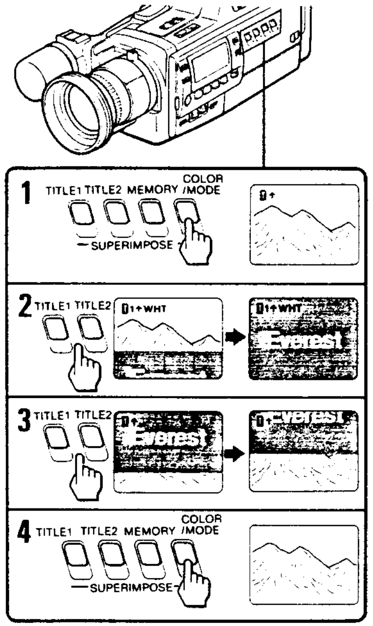
If you do not want to record the picture for the background
Point the recorder to a white, flat object such as a white wall, paper, etc.

To change the colour of the background
While the title is being displayed, press the COLOR/MODE button.

K-7



K-8



To Scroll the Reversed Title K-7

To check that the reversed title is scrolled K-8

1 In the recording pause mode, press the COLOR/MODE button **three times.**
The arrow mark and the T mark will be displayed.
2 Press the TITLE 1 or 2 button.
The reversed picture will be displayed from bottom to center.
3 Press the TITLE 1 or 2 button again.
The title will be displayed from center to top.
4 Press the COLOR/MODE button **once.**
The marks will disappear.

To record the reversed and scrolled title

1 In the recording pause mode, press the COLOR/MODE button **three times.**
The arrow mark and the T mark will be displayed.
2 Start the camera recording.
3 Press the TITLE 1 or 2 button at the point from which the scrolled title is to be recorded.
4 After the reversed title stops at the center of the picture, press the TITLE 1 or 2 button again.
The reversed title is scrolled from center to top.

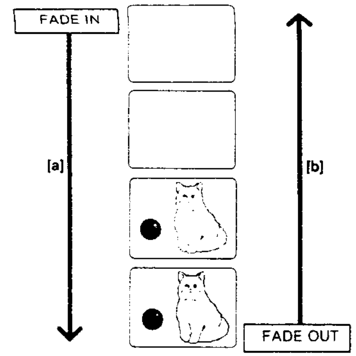
To clear the reversed scroll mode
After recording, press the COLOR/MODE button **once.**

If you do not want to record the picture for the background
Point the recorder to a white, flat object such as a white wall, paper, etc.

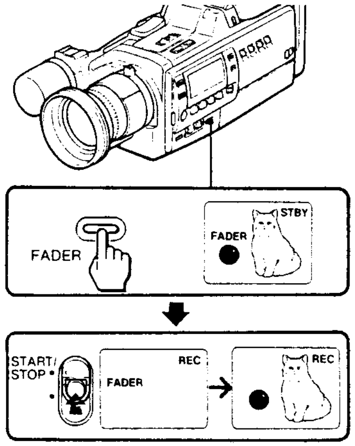
To change the colour of the background
While the title is being scrolled or displayed at the center, press the COLOR/MODE button.

1-15. FADE-IN AND FADE-OUT

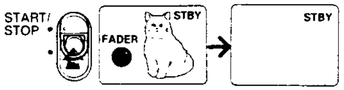
L-1



L-2



L-3



When fade-in, the picture and sound will appear gradually from a white, silent scene. [a]
With fade-out, the picture and sound will disappear gradually. [b]
Dramatic effects can be added by using fade-in at the beginning of a recording and fade-out at the end.

To Fade in L-2

1 Slide the STANDBY switch up to set the unit to recording pause mode.
2 Press the FADER button.
3 Press START/STOP button to start camera recording.
Fade-in will be performed.

To Fade out

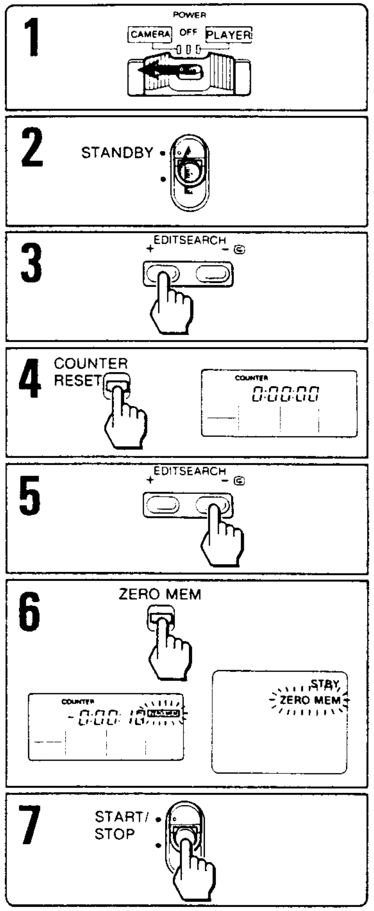
1 Start camera recording.
2 Press the FADER button.
3 At the point where fade-out is to be started, press the START/STOP button.
Fade-out will be performed and then recording will stop. L-3

To cancel FADER mode before fade-in or fade-out
Press the FADER button so that the FADER indication disappears.

Notes
- The FADER button does not function while the STBY indicator is blinking on the viewfinder screen immediately after the POWER switch has been set to CAMERA. Wait until the STBY indicator lights.
- The FADER mode is cancelled automatically once fade-in or fade-out has been performed.

1-16. EDITSEARCH

M



You can insert (record) video and audio simultaneously from the camera onto any recorded tape.

Operation M

- Monitor the picture being inserted on the viewfinder screen.
- Select the same tape speed as was used for already recorded portion with the REC MODE selector.

1 While pressing the small button, set the POWER switch to CAMERA.
2 Slide the STANDBY switch up to set the unit to recording pause mode.
3 Keep pressing the "+" or "−" side of the EDITSEARCH button and release the button at the point where the insert should **end.**
The unit will be set to recording pause mode.
4 Display the counter in the display window and press the COUNTER RESET button.
The counter is reset to zero.
(For an accurate ending point, press the COUNTER RESET button immediately after the EDITSEARCH button is released and while the still picture is displayed.)
5 Keep pressing the "−" side of the EDITSEARCH button and release the button at the point where the insert should **begin.**
6 Press the ZERO MEM button.
The insert ending point is stored in memory.
7 Press the START/STOP button.
Insert recording will begin.

The insert recording will stop automatically near the counter zero point.

To cancel ZERO MEM mode
Press the ZERO MEM button so that the ZERO MEM indicator disappears.

To change the insert ending point
Press the ZERO MEM button to turn off the ZERO MEM indicator and repeat steps 3 through 6 above.

To insert the date or time
Follow steps 1 through 6 above, press the DATE or TIME button to display the date or time indication on the viewfinder screen and then press the START/STOP button.

P-5

To Erase Index Signals P-5

1 Play back the beginning of the picture to be erased by index scan or index search.
2 Within approximately 10 seconds, while the tape is being played back, press the ERASE button.
When the index signal is erased while index scanning, the index scan is resumed.
When the index signal is erased while index searching, normal playback is begun.

Notes
- Press the ERASE button more than 2 seconds after the playback starts.
- If the safety tab on the cassette is slid out, the index signal cannot be erased.
- While an index signal is being erased, the recorded sound cannot be heard and a black bar appears at the bottom of the playback picture. However, recorded signals are not affected.
- The index signal marked by a VTR such as the EV-S850 series can be detected with this unit but cannot be erased.
The index signal marked by this unit can be detected with a VTR such as the EV-S850 series but cannot be erased.
- When the audio is dubbed in the portion where the index signal is marked, the index signal may be erased.

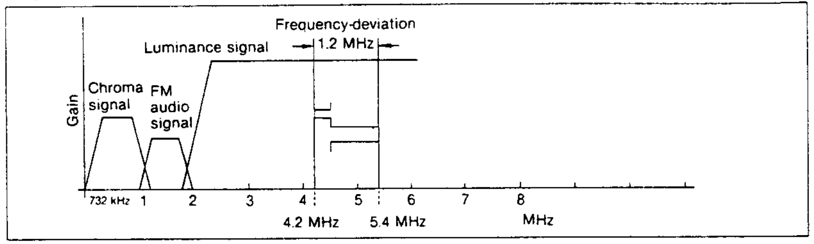
1-19. Hi8 (HIGH EIGHT) VIDEO SYSTEM

The 8 mm video system employs a metal powder tape. This means the video camera recorder is capable of recording a large amount of information and enhances picture quality. Taking advantage of the 8 mm video system, the Hi8 video system has been developed. The main characteristics of the Hi8 video system are as follows:

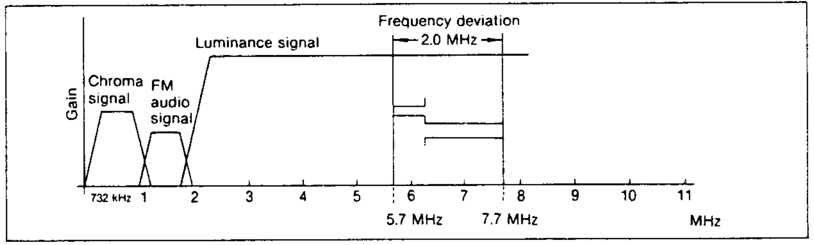
Super High Quality Picture

The information capacity is a key element for picture improvement. It can be increased by shifting up the FM carrier frequency range. In the Hi 8 video system, the FM carrier frequency range of the luminance signal is shifted up to 5.7–7.7 MHz. This is higher than the 4.2–5.4 MHz range of the standard 8 mm video system. Thanks to this, the horizontal resolution is improved to more than 400 lines.

Frequency allocation of the standard 8 mm video system


Frequency-deviation
Luminance signal
1.2 MHz
Gain
Chroma signal
FM audio signal
732 kHz
1
2
3
4
5
6
7
8
4.2 MHz
5.4 MHz
MHz

Frequency allocation of the Hi8 video system

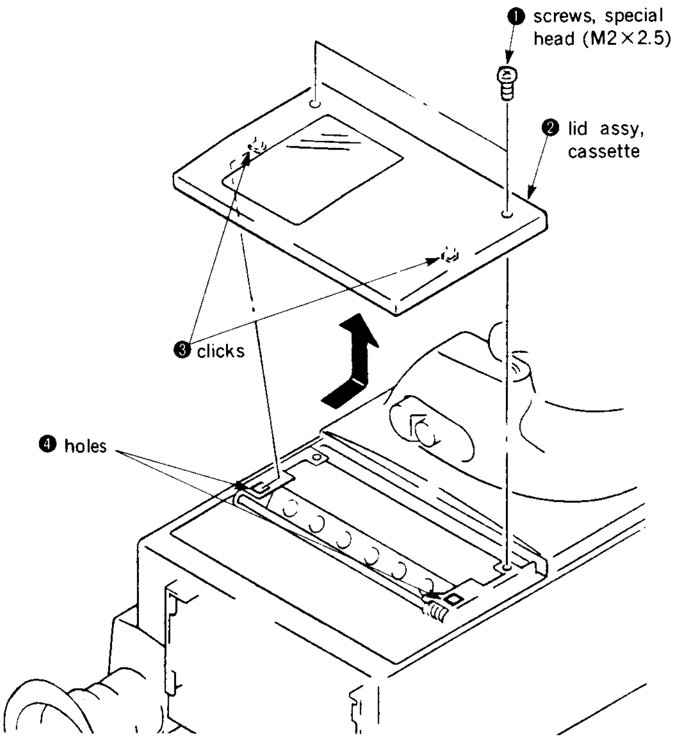

Frequency deviation
Luminance signal
2.0 MHz
Gain
Chroma signal
FM audio signal
732 kHz
1
2
3
4
5
6
7
8
9
10
11
5.7 MHz
7.7 MHz
MHz

SECTION 2
DISASSEMBLY

Note: The number within "●"means the sequential number for dismounting.

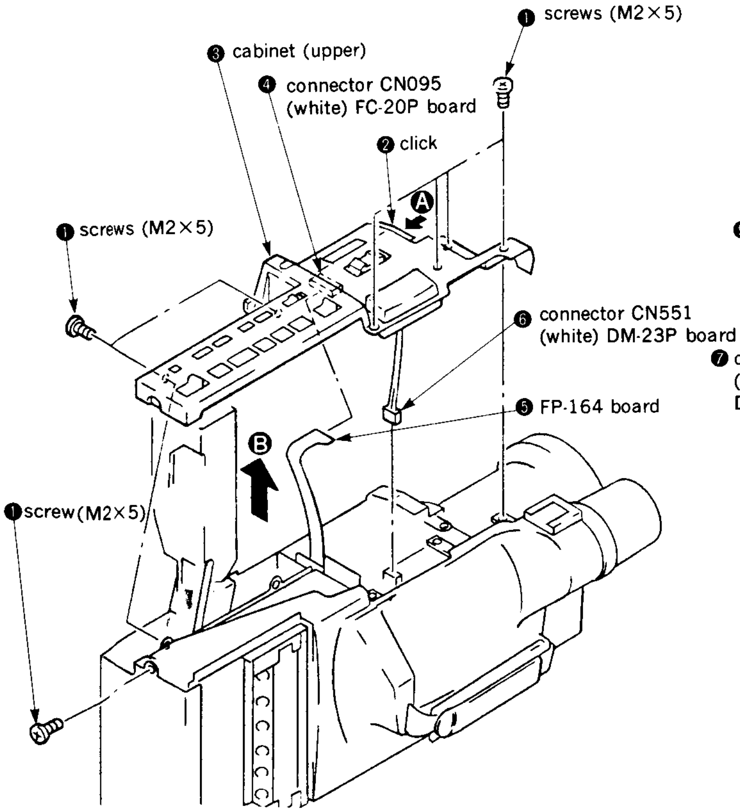
2-1. REMOVAL OF CASSETTE LID ASSY

Note: When mounting, fit the click ❸ into two holes completely, then, clamp two screws ❶.


❶ screws, special head (M2×2.5)
❷ lid assy, cassette
❸ clicks
❹ holes

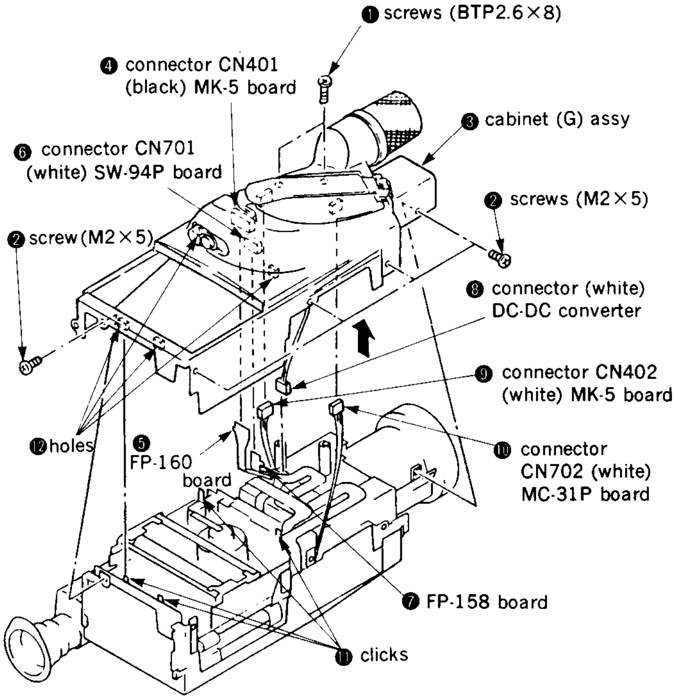
2-2. REMOVAL OF CABINET (UPPER)

Note: While pushing the click ❷ to the direction of arrow markⒶ, dismount the (upper) cabinet ❸ to the direction with arrow mark Ⓑ.

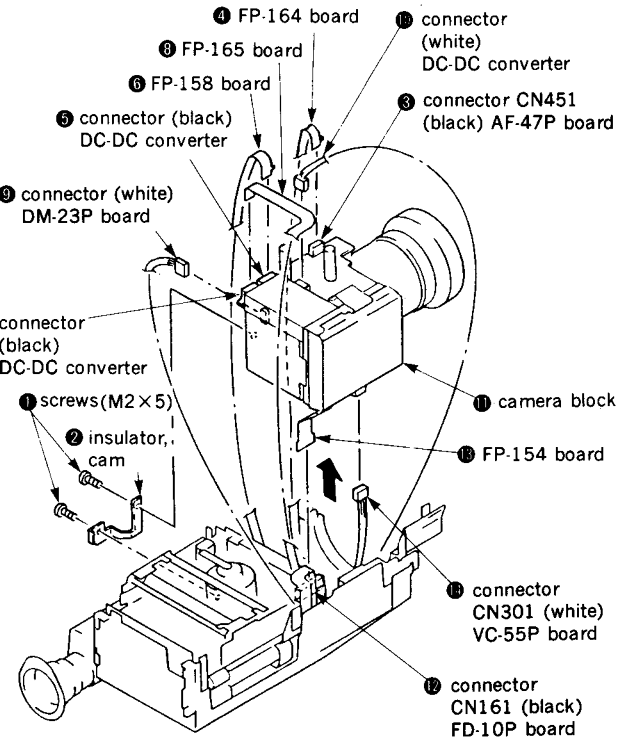

❶ screws (M2×5)
❸ cabinet (upper)
❹ connector CN095 (white) FC-20P board
❷ click
Ⓐ
❶ screws (M2×5)
❻ connector CN551 (white) DM-23P board
❺ FP-164 board
Ⓑ
❶screw(M2×5)

2-3. REMOVAL OF CABINET (G) ASSY

Note: When mounting, fit four clicks ⓫ into four holes ⓬.

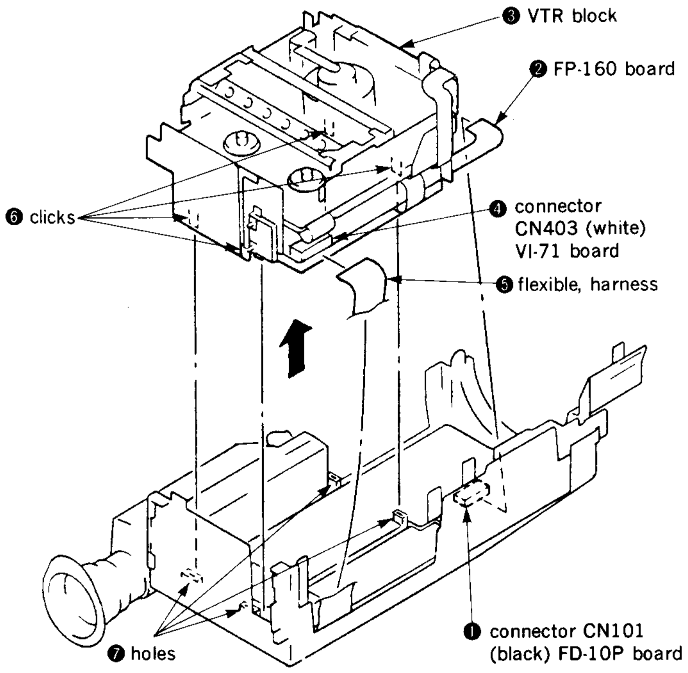

❶ screws (BTP2.6×8)
❹ connector CN401 (black) MK-5 board
❸ cabinet (G) assy
❻ connector CN701 (white) SW-94P board
❷ screws (M2×5)
❷ screw(M2×5)
❽ connector (white) DC-DC converter
❾ connector CN402 (white) MK-5 board
⓬holes
❺ FP-160 board
❿ connector CN702 (white) MC-31P board
❼ FP-158 board
⓫ clicks

2-4. REMOVAL OF CAMERA BLOCK

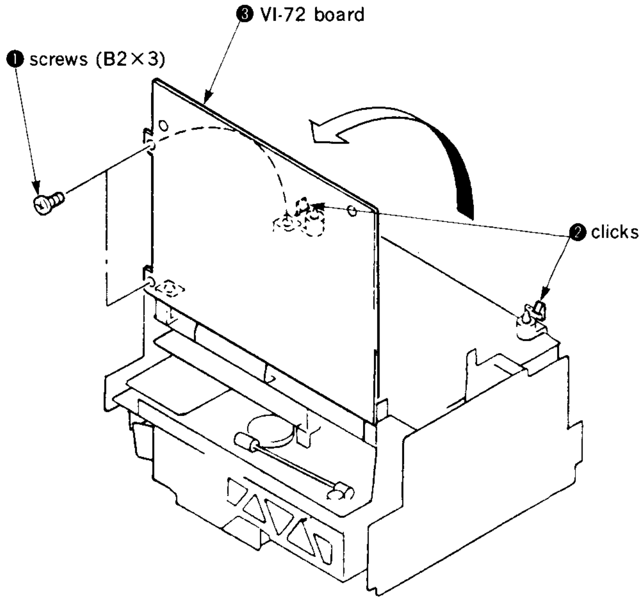

❹ FP-164 board
❽ FP-165 board
❻ FP-158 board
❺ connector (black) DC-DC converter
⓭ connector (white) DC-DC converter
❸ connector CN451 (black) AF-47P board
❾ connector (white) DM-23P board
❼ connector (black) DC-DC converter
❶ screws(M2×5)
❷ insulator, cam
⓫ camera block
⓮ FP-154 board
⓾ connector CN301 (white) VC-55P board
⓬ connector CN161 (black) FD-10P board

2-5. REMOVAL OF VTR BLOCK

Note: When mounting, fit four clicks ❻ into four holes ❼.

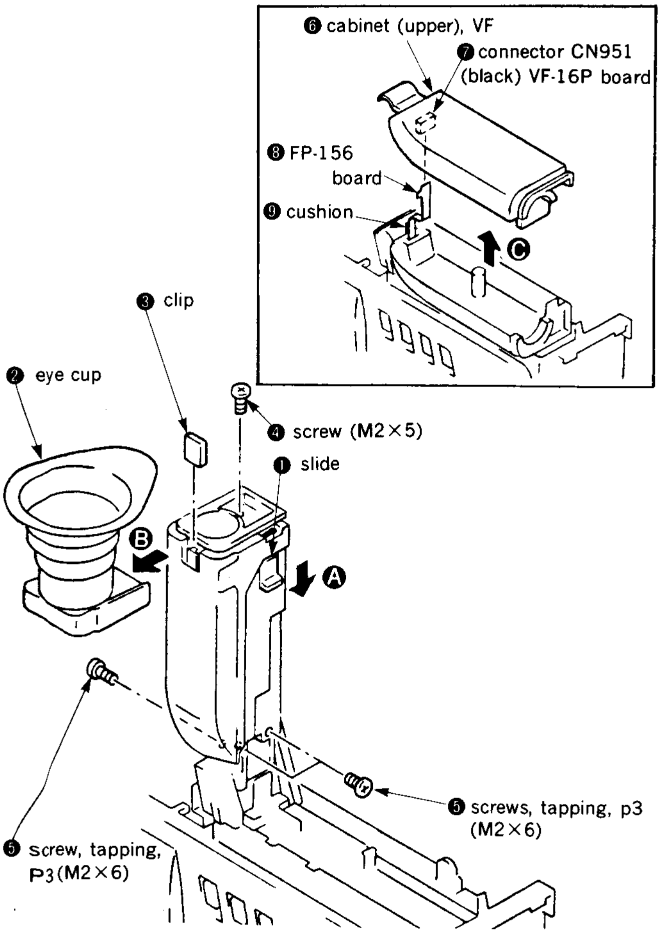

❸ VTR block
❷ FP-160 board
❻ clicks
❹ connector CN403 (white) VI-71 board
❺ flexible, harness
❼ holes
❶ connector CN101 (black) FD-10P board

2-7. OPENING VI-72 BOARD

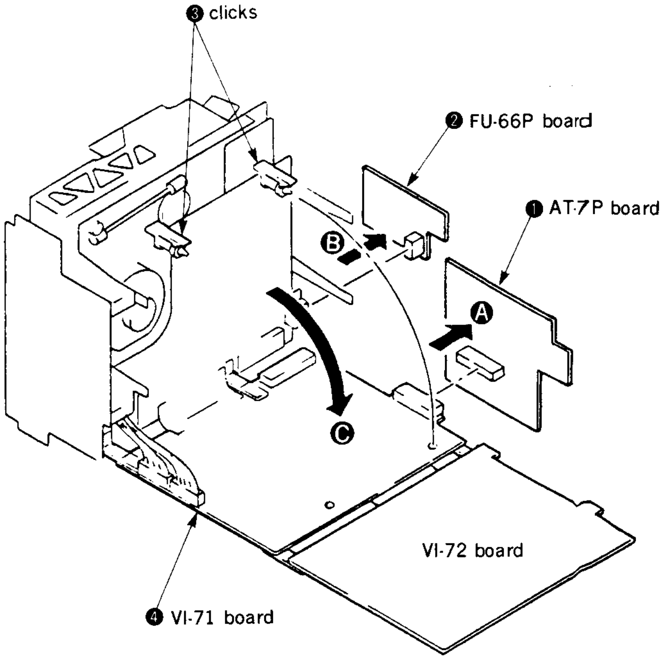

❸ VI-72 board
❶ screws (B2×3)
❷ clicks

2-6. REMOVAL OF VF CABINET (UPPER)

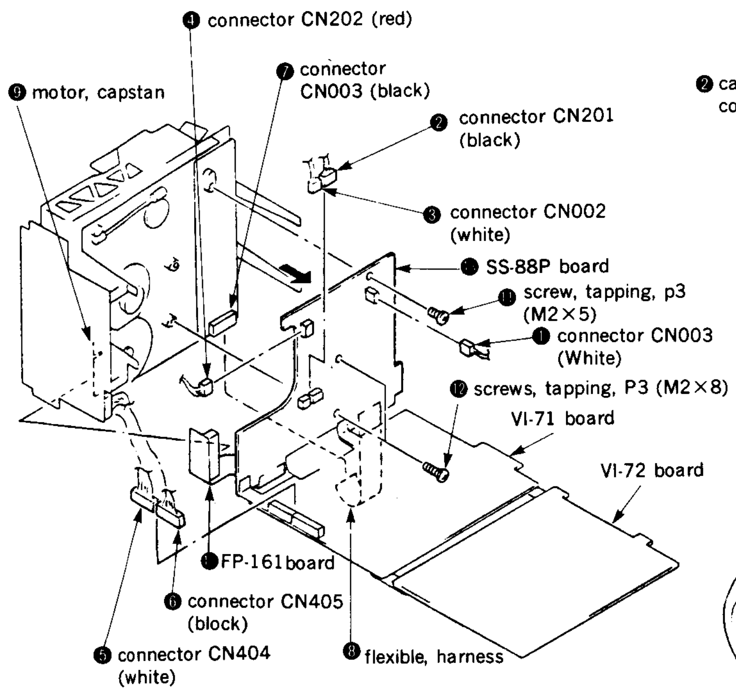
Note: When dismounting the (upper) cabinet, VF ❻, dismount it in peeling manner, because FP-156 board ❽ is fit on the (upper) cabinet and VF ❻ by cushion ❾.


❻ cabinet (upper), VF
❼ connector CN951 (black) VF-16P board
❽ FP-156 board
❾ cushion
Ⓒ
❸ clip
❷ eye cup
❹ screw (M2×5)
❶ slide
Ⓑ
Ⓐ
❺ screws, tapping, p3 (M2×6)
❺ screw, tapping, P3(M2×6)

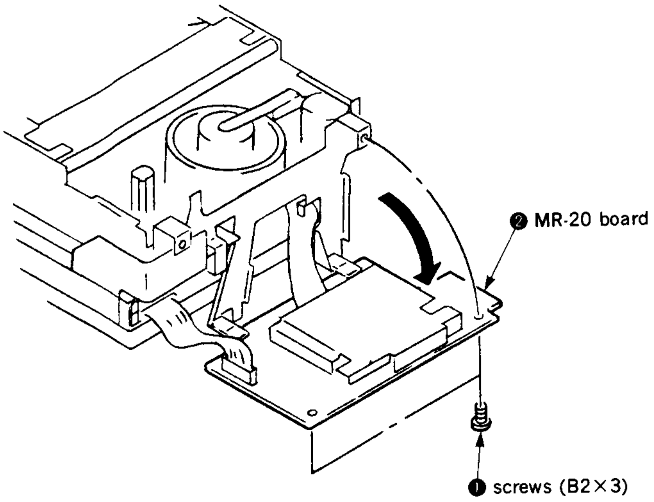
2-8. OPENING VI-71 BOARD


❸ clicks
❷ FU-66P board
❶ AT-7P board
Ⓑ
Ⓐ
Ⓒ
VI-72 board
❹ VI-71 board

2-9. REMOVAL OF SS-88P BOARD

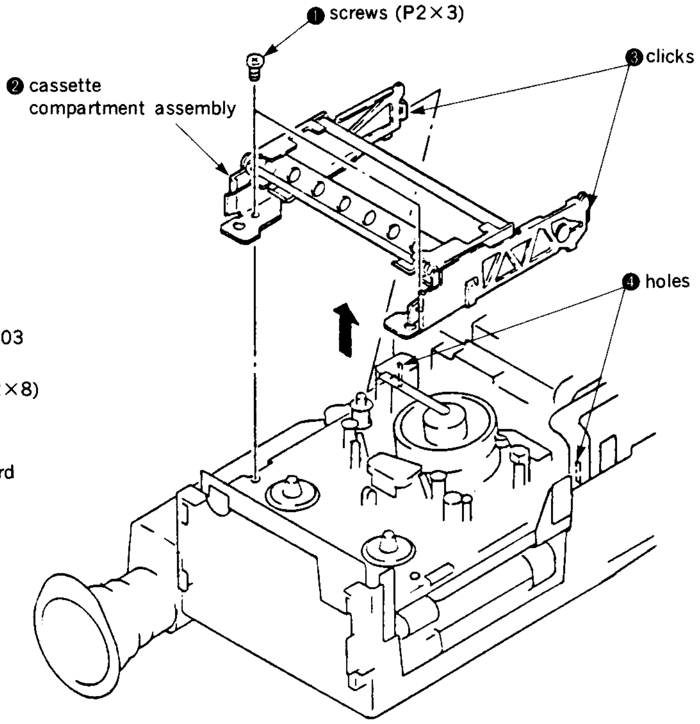

❹ connector CN202 (red)
❾ motor, capstan
❼ connector CN003 (black)
❷ connector CN201 (black)
❸ connector CN002 (white)
⓭ SS-88P board
⓫ screw, tapping, p3 (M2×5)
❶ connector CN003 (White)
⓬ screws, tapping, P3 (M2×8)
VI-71 board
VI-72 board
❿ FP-161board
❻ connector CN405 (block)
❺ connector CN404 (white)
❽ flexible, harness

2-10. OPENING MR-20 BOARD

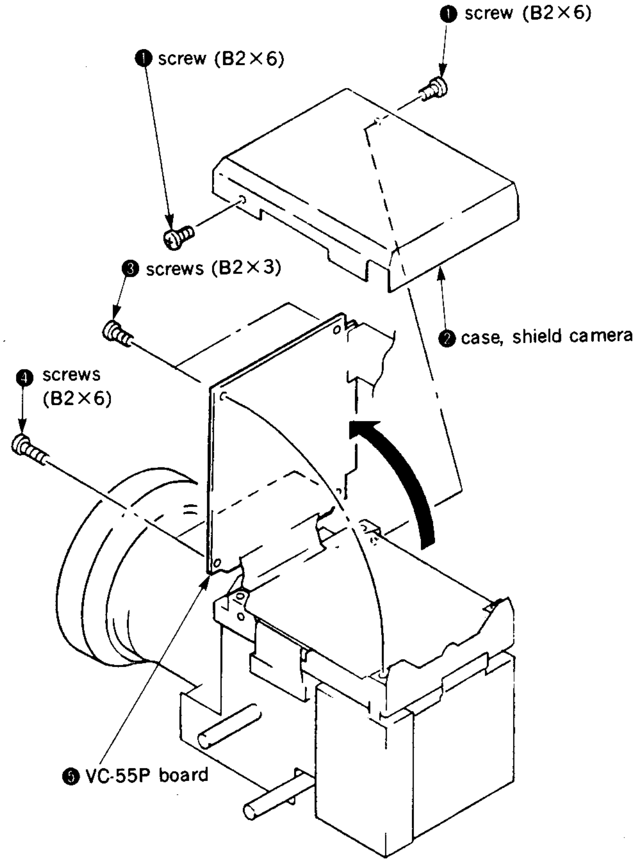

❷ MR-20 board
❶ screws (B2×3)

2-11. REMOVAL OF CASSETTE COMPARTMENT ASSEMBLY

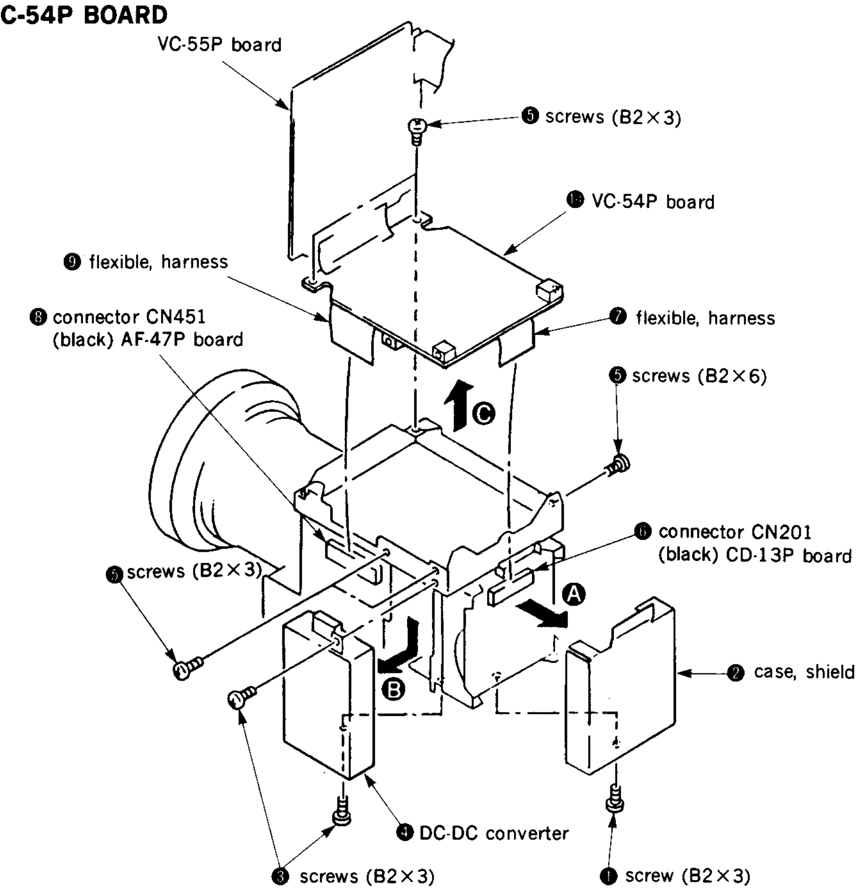
Note: When mounting the cassette compartment assembly ❷, fit two clicks ❸ into two holes ❹, then, clamp two screws ❶.


❶ screws (P2×3)
❷ cassette compartment assembly
❸ clicks
❹ holes

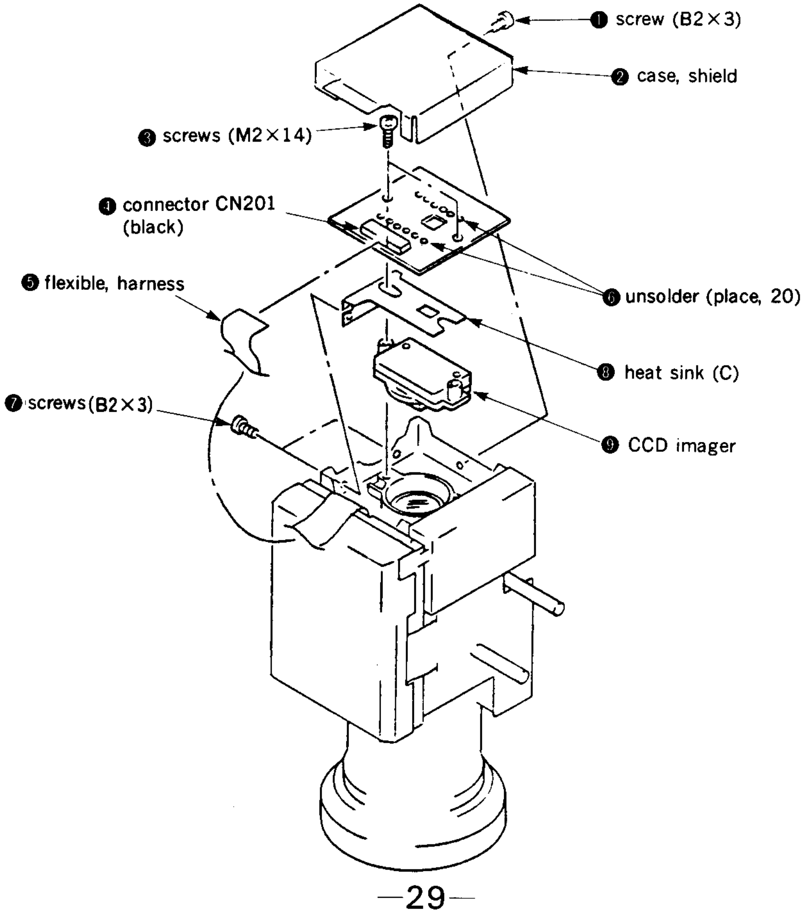
2-12. OPENING VC-55P BOARD


❶ screw (B2×6)
❶ screw (B2×6)
❸ screws (B2×3)
❷ case, shield camera
❹ screws (B2×6)
❺ VC-55P board

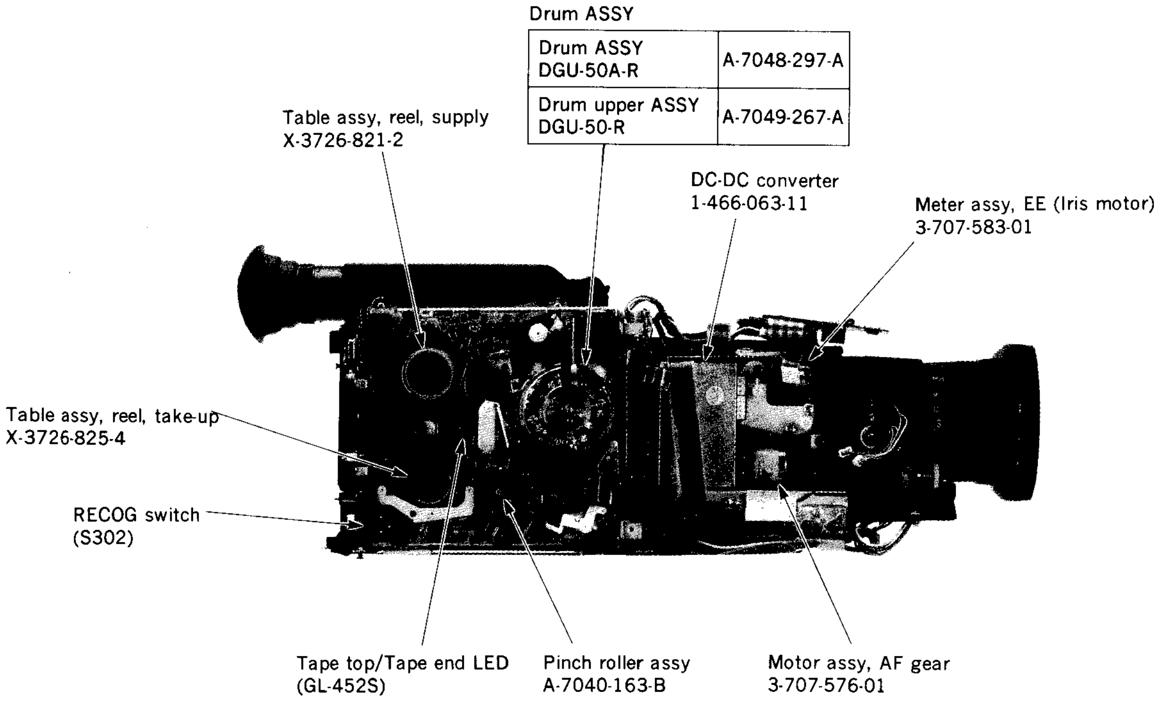
2-13. REMOVAL OF VC-54P BOARD


VC-55P board
❺ screws (B2×3)
❿ VC-54P board
❾ flexible, harness
❽ connector CN451
(black) AF-47P board
❼ flexible, harness
❺ screws (B2×6)
Ⓒ
❻ connector CN201
(black) CD-13P board
❺ screws (B2×3)
Ⓐ
Ⓑ
❷ case, shield
❹ DC-DC converter
❸ screws (B2×3)
❶ screw (B2×3)

2-14. REMOVAL OF CCD IMAGER

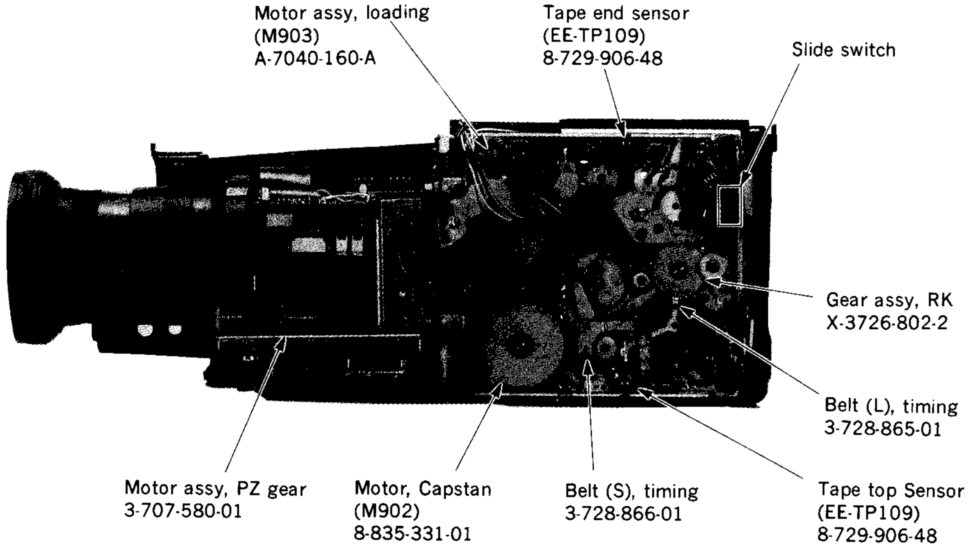

❶ screw (B2×3)
❷ case, shield
❸ screws (M2×14)
❹ connector CN201
(black)
❻ unsolder (place, 20)
❺ flexible, harness
❽ heat sink (C)
❼ screws (B2×3)
❾ CCD imager

2-15. INTERNAL VIEWS


Drum ASSY

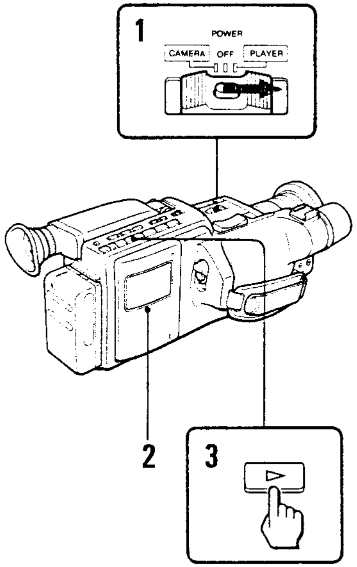
Drum ASSY DGU-50A-R	A-7048-297-A
Drum upper ASSY DGU-50-R	A-7049-267-A

Table assy, reel, supply
X-3726-821-2
DC-DC converter
1-466-063-11
Meter assy, EE (Iris motor)
3-707-583-01
Table assy, reel, take-up
X-3726-825-4
RECOG switch
(S302)
Tape top/Tape end LED
(GL-452S)
Pinch roller assy
A-7040-163-B
Motor assy, AF gear
3-707-576-01

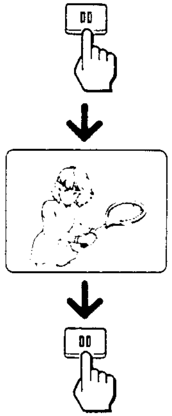

Motor assy, loading
(M903)
A-7040-160-A
Tape end sensor
(EE-TP109)
8-729-906-48
Slide switch
Gear assy, RK
X-3726-802-2
Belt (L), timing
3-728-865-01
Motor assy, PZ gear
3-707-580-01
Motor, Capstan
(M902)
8-835-331-01
Belt (S), timing
3-728-866-01
Tape top Sensor
(EE-TP109)
8-729-906-48

1-17. PLAYBACK

O-1



O-2



Turn on the TV (or colour monitor), and select the programme position for viewing a playback picture (or set the TV/VIDEO selector to VIDEO).

O-1

1 While pressing the small button, set the POWER switch to PLAYER.
2 Insert a cassette.
3 Press the ▶ button.
Playback will start.

To stop the tape, press the ■ button.

After using, be sure to set the POWER switch on the recorder to OFF.

To view a still picture O-2
Press the ❚❚ button during playback. To resume playback, press the ❚❚ button again.

Monitoring a High-Speed Picture

During playback

1 In the playback mode, press the ◀◀ or ▶▶ button.
The picture will be monitored at high speed as long as it is kept pressed.
2 Release the ◀◀ or ▶▶ button at the desired point.
Normal playback will resume.

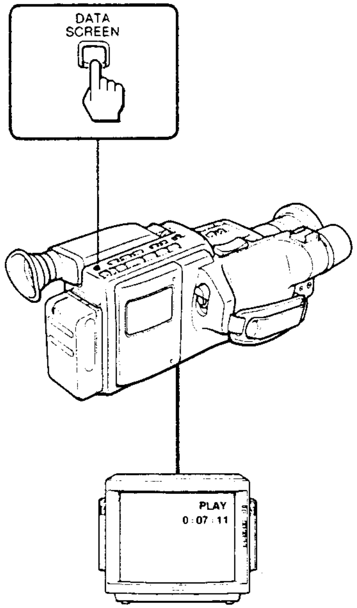
During fast-forward or rewind

1 Press the ▶▶ button in fast-forward mode or press the ◀◀ button in rewind mode.
The picture is displayed while the button is kept pressed.
2 Release the ◀◀ or ▶▶ button to resume normal fast-forward or rewind mode.

Notes

- If you move the position of the POWER switch during playback, the tape will stop. When you move the POWER switch to CAMERA in the playback pause mode, however, the unit will enter recording pause mode.
- When the pause mode lasts for 5 minutes or more, the unit will automatically enter the stop mode.
- The sound will be muted in the high-speed picture.
- When a tape is recorded in SP mode, a high-speed picture may be noisy with many streaks and become black and white. Streaks will be wider than those of an LP-recorded tape.

O-3



Frame-by-frame playback
Press the ❚❚▶ button in the still picture mode. To resume normal playback, press the ▷ button.

Slow motion playback
Press the ❚▶ button in the still picture mode or playback mode. To resume normal playback, press the ▷ button.

To adjust the frame-by-frame and slow playback pictures
Press the SLOW/STILL ADJ buttons.
The adjustment can be kept memorized until the lithium battery is exhausted.

To adjust the still picture
If the still picture appears to shake, press the "+" or "−" of the SLOW/STILL ADJ button until the picture stabilizes. The adjustment can be kept memorized until the lithium battery is exhausted.

Notes

- When a tape is recorded in the SP mode, streaks will appear in the still picture, frame-by-frame playback and slow playback modes.
- When the playback picture is viewed on another VTR or the viewfinder of this unit, adjust the picture again.
- When a tape is recorded on another VTR, adjust the playback picture. However in some cases the picture may not be adjusted.

To Display the Indication on the Viewfinder Screen on the TV O-3

Press the DATA SCREEN button.
The indication on the viewfinder screen is superimposed on the TV programme.
It is convenient to check the indication on the TV screen when the playback picture is viewed on the TV or when the video camera recorder is operated from a distance using the Remote Commander.

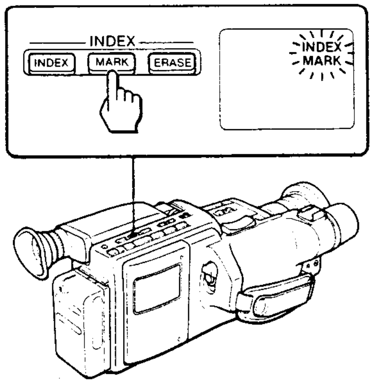
To clear the indication, press the DATA SCREEN button again.

Notes

- To edit from the CCD-V900E to another VTR, clear the indication on the TV or the indication will be recorded with the picture.
- During playback or in the still picture mode, the data indications appear to shake.

1-18. TO MARK INDEX SIGNALS DURING PLAYBACK

P-1



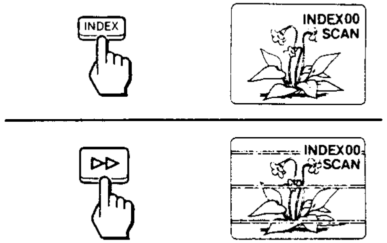
The desired programmes can be easily located by the index signals marked on the tape.
Press the MARK button at any desired point on the tape during playback. P-1

When the index signal is marked in the playback pause mode (the MARK indication blinks), the index signal will be marked just after the playback pause mode is released.

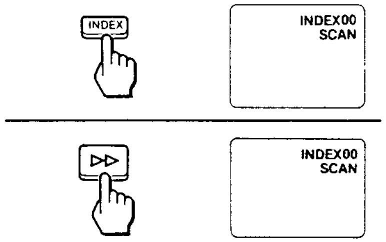
Notes

- The index signals can be marked at any desired point. Make sure there is more than 2 minutes of space between two index signals. If there is more than one index signal marked within an interval of 2 minutes at the normal tape speed, the unit may not function properly.
- The recorded sound cannot be heard and a black bar appears at the bottom of the playback picture while the index signal is being marked during playback.
  However, the recorded signals are not affected.
- The index signals cannot be registered on a cassette tape whose safety tab is slid out.

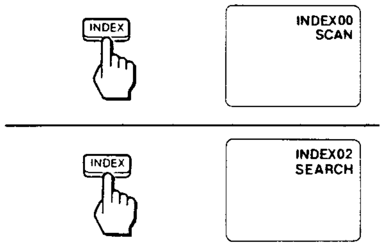
P-2



P-3



P-4



To Scan or Search the Programme during Playback

To scan the beginning of each programme during monitoring the picture — index scan (1) P-2

1. Press the INDEX button in the playback or playback pause mode.
2. Press the ◀◀ or ▶▶ button.
   The tape is played back for approximately 10 seconds at the point where the index signal is marked.
3. To continue playback, press the ▷ button.
   When no button is pressed, the picture is automatically scanned to the next or previous programme.

To scan the beginning of each programme in sequence — index scan (2) P-3

1. Press the INDEX button in the stop mode.
2. Press the ◀◀ or ▶▶ button.
   The tape is played back for approximately 10 seconds at the point where the index signal is marked.
3. Press the ▷ button to continue playing back the desired picture.

When no button is pressed, the picture is automatically scanned to the next or previous programme.

To locate the desired programme — index search P-4

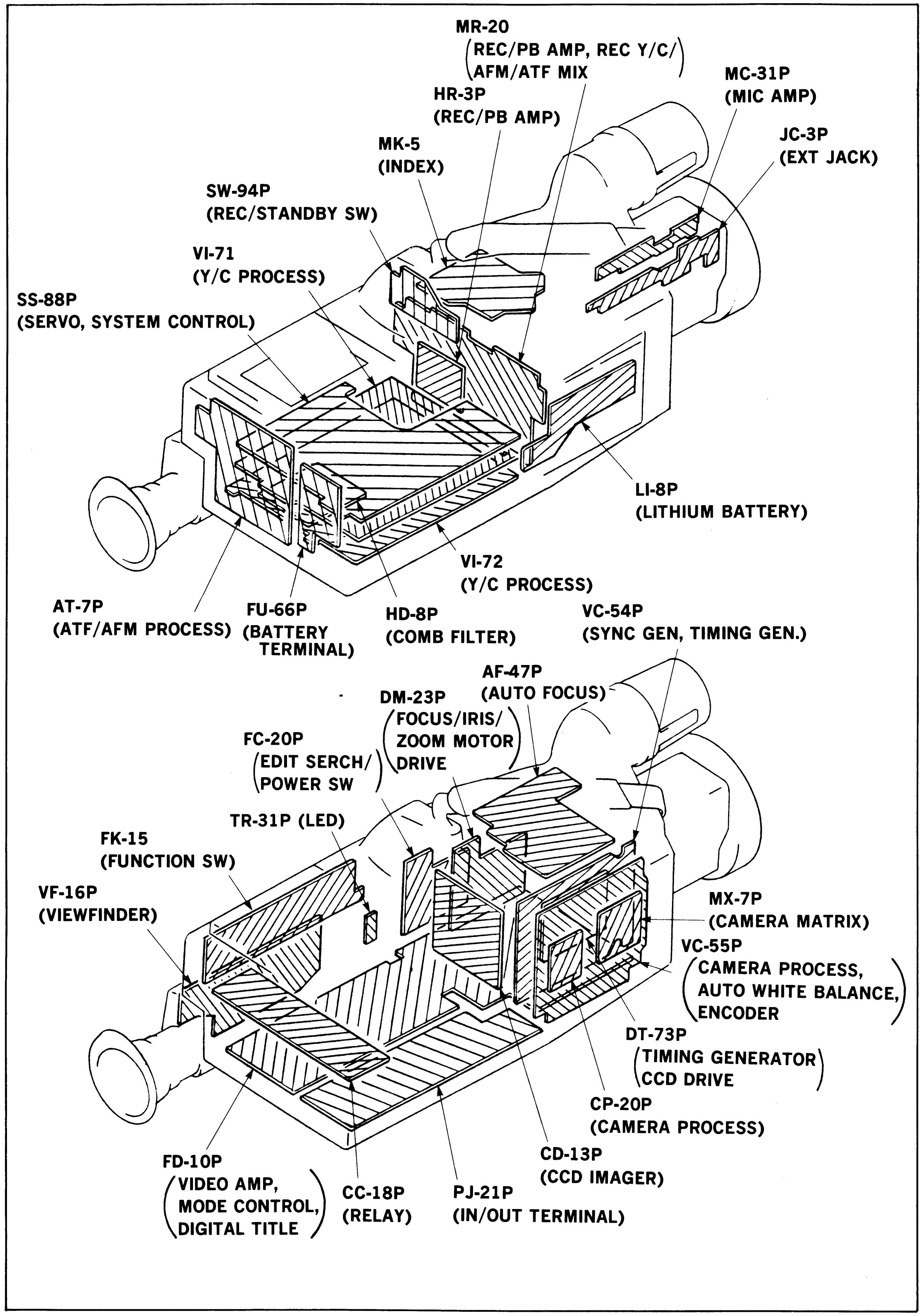
1. Press the INDEX button in the stop or playback mode.
2. Press the INDEX button again until the index number of the desired programme is displayed on the viewfinder screen.
3. Press the ◀◀ or ▶▶ button.
   The playback is started at the beginning of the designated picture.

To correct the index number

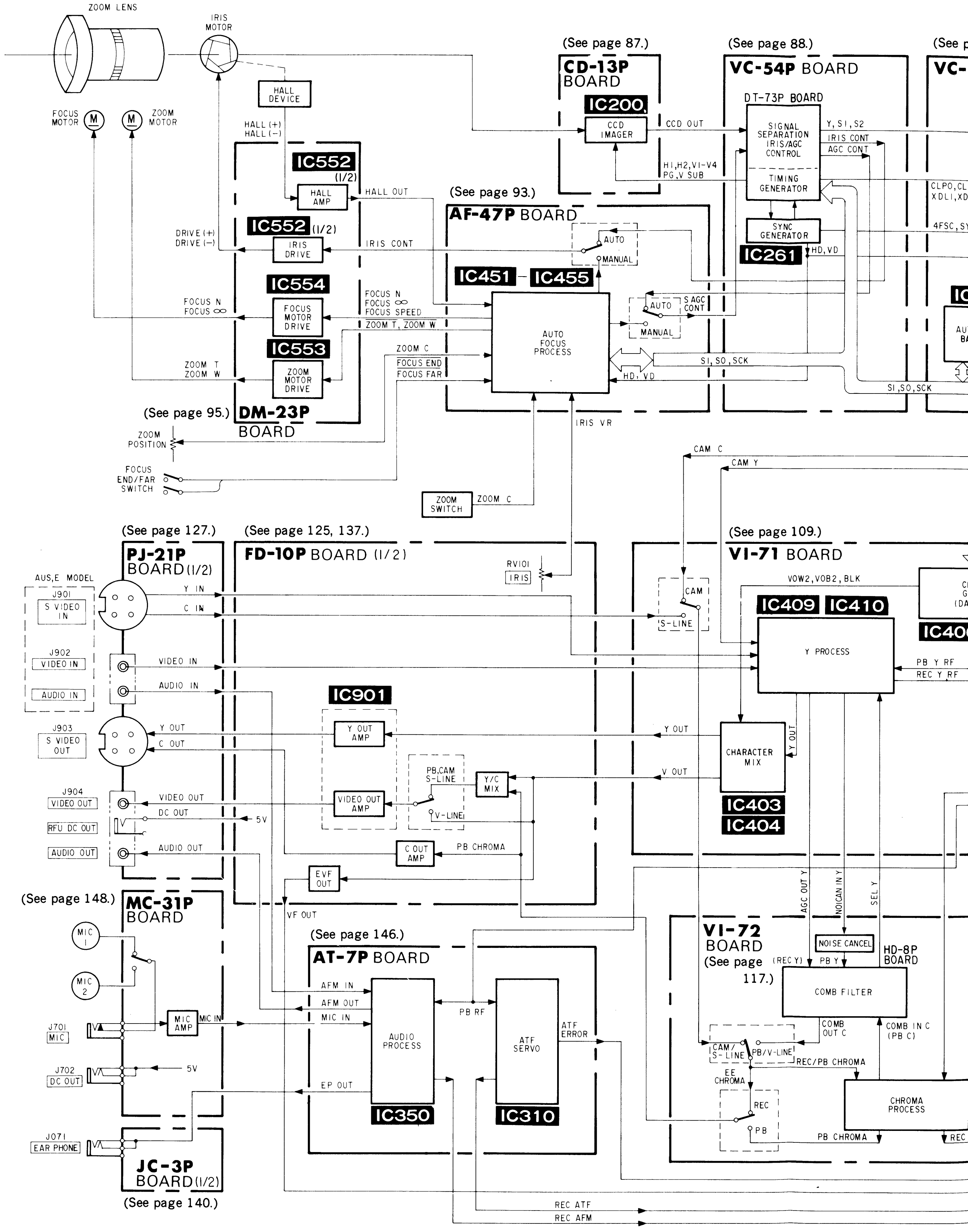
Press the ■ button and repeat the above steps.

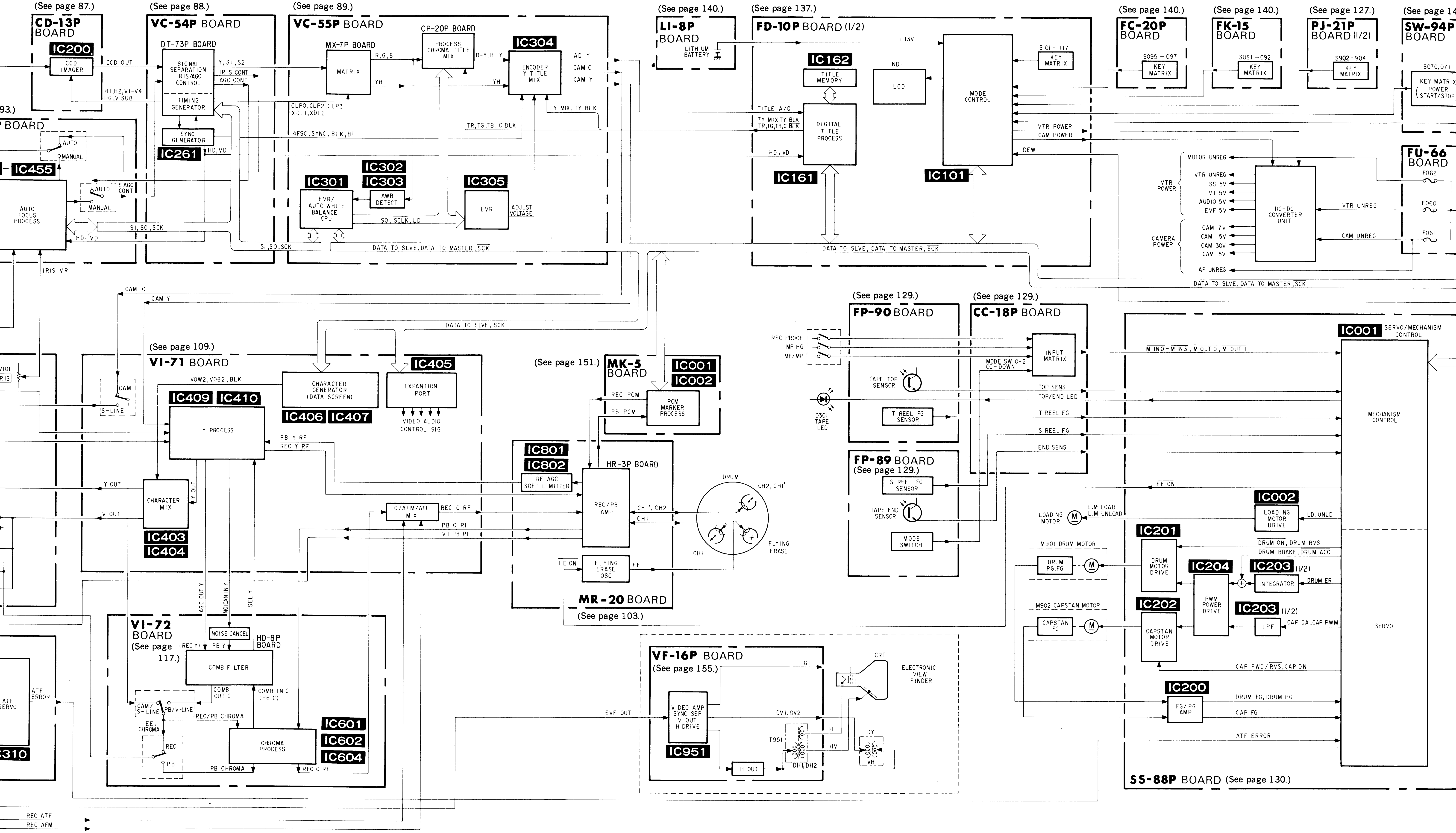
SECTION 3
DIAGRAMS

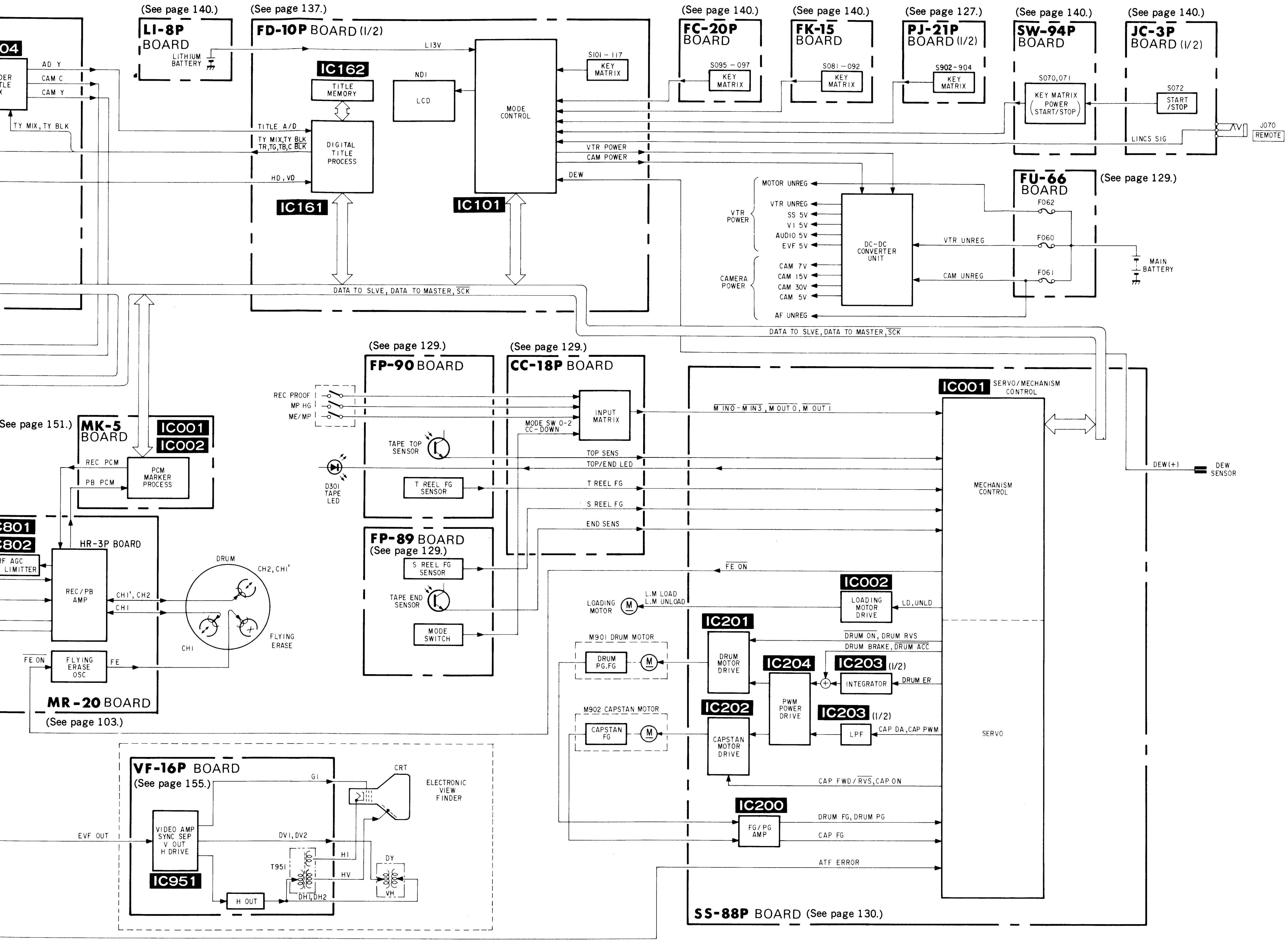
3-1. CIRCUIT BOARDS LOCATION


MR-20
(REC/PB AMP, REC Y/C/ AFM/ATF MIX)
HR-3P
(REC/PB AMP)
MC-31P
(MIC AMP)
JC-3P
(EXT JACK)
MK-5
(INDEX)
SW-94P
(REC/STANDBY SW)
VI-71
(Y/C PROCESS)
SS-88P
(SERVO, SYSTEM CONTROL)
LI-8P
(LITHIUM BATTERY)
VI-72
(Y/C PROCESS)
AT-7P
(ATF/AFM PROCESS)
FU-66P
(BATTERY TERMINAL)
HD-8P
(COMB FILTER)
VC-54P
(SYNC GEN, TIMING GEN.)
AF-47P
(AUTO FOCUS)
DM-23P
(FOCUS/IRIS/ ZOOM MOTOR DRIVE
FC-20P
(EDIT SERCH/ POWER SW
TR-31P (LED)
FK-15
(FUNCTION SW)
VF-16P
(VIEWFINDER)
MX-7P
(CAMERA MATRIX)
VC-55P
(CAMERA PROCESS, AUTO WHITE BALANCE, ENCODER
DT-73P
(TIMING GENERATOR CCD DRIVE
CP-20P
(CAMERA PROCESS)
CD-13P
(CCD IMAGER)
FD-10P
(VIDEO AMP, MODE CONTROL, DIGITAL TITLE
CC-18P
(RELAY)
PJ-21P
(IN/OUT TERMINAL)

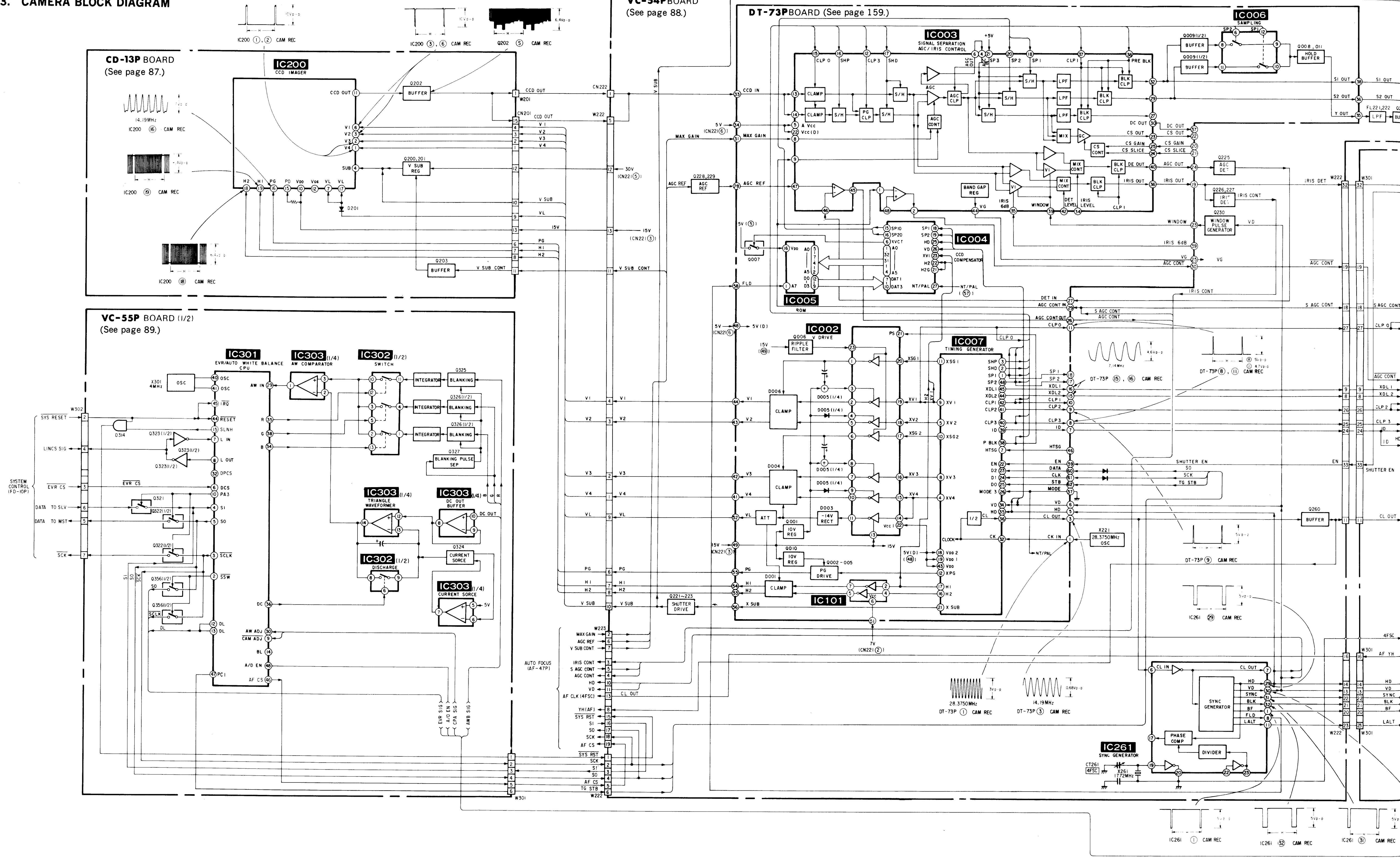
3-2. OVERALL BLOCK DIAGRAM


ZOOM LENS
IRIS MOTOR
HALL DEVICE
FOCUS MOTOR
ZOOM MOTOR
HALL (+)
HALL (−)
IC552
(1/2)
HALL AMP
HALL OUT
IC552 (1/2)
IRIS DRIVE
DRIVE (+)
DRIVE (−)
IRIS CONT
IC554
FOCUS MOTOR DRIVE
FOCUS N
FOCUS ∞
FOCUS SPEED
ZOOM T, ZOOM W
IC553
ZOOM MOTOR DRIVE
ZOOM T
ZOOM W
ZOOM C
FOCUS END
FOCUS FAR
(See page 95.)
DM-23P BOARD
ZOOM POSITION
FOCUS END/FAR SWITCH
ZOOM SWITCH
(See page 87.)
CD-13P BOARD
IC200
CCD IMAGER
CCD OUT
H1,H2,V1-V4
PG,V SUB
(See page 93.)
AF-47P BOARD
AUTO
MANUAL
IC451 - IC455
AUTO FOCUS PROCESS
S AGC CONT
SI,SO,SCK
HD, VD
IRIS VR
(See page 88.)
VC-54P BOARD
DT-73P BOARD
SIGNAL SEPARATION IRIS/AGC CONTROL
TIMING GENERATOR
Y, S1, S2
IRIS CONT
AGC CONT
SYNC GENERATOR
IC261
HD, VD
CLPO,CL
XDL1,XD
4FSC,S
(See
VC-
CAM C
CAM Y
(See page 127.)
PJ-21P BOARD (1/2)
AUS,E MODEL
J901 S VIDEO IN
Y IN
C IN
J902 VIDEO IN
VIDEO IN
AUDIO IN
J903 S VIDEO OUT
Y OUT
C OUT
J904 VIDEO OUT
VIDEO OUT
DC OUT
RFU DC OUT
AUDIO OUT
5V
(See page 125, 137.)
FD-10P BOARD (1/2)
RV101 IRIS
IC901
Y OUT AMP
VIDEO OUT AMP
PB,CAM S-LINE
V-LINE
Y/C MIX
C OUT AMP
PB CHROMA
EVF OUT
VF OUT
(See page 109.)
VI-71 BOARD
CAM
S-LINE
VOW2,VOB2,BLK
IC409 IC410
Y PROCESS
PB Y RF
REC Y RF
Y OUT
V OUT
CHARACTER MIX
IC403
IC404
AGC OUT Y
NOICAN IN Y
SEL Y
(See page 148.)
MC-31P BOARD
MIC 1
MIC 2
MIC AMP
MIC IN
J701 MIC
J702 DC OUT
5V
J071 EAR PHONE
JC-3P BOARD (1/2)
(See page 140.)
(See page 146.)
AT-7P BOARD
AFM IN
AFM OUT
MIC IN
EP OUT
AUDIO PROCESS
IC350
PB RF
ATF SERVO
IC310
ATF ERROR
VI-72 BOARD
(See page 117.)
(REC Y)
PB Y
NOISE CANCEL
HD-8P BOARD
COMB FILTER
COMB OUT C
COMB IN C (PB C)
CAM/S-LINE
PB/V-LINE
EE CHROMA
REC/PB CHROMA
REC
PB
PB CHROMA
CHROMA PROCESS
REC
REC ATF
REC AFM

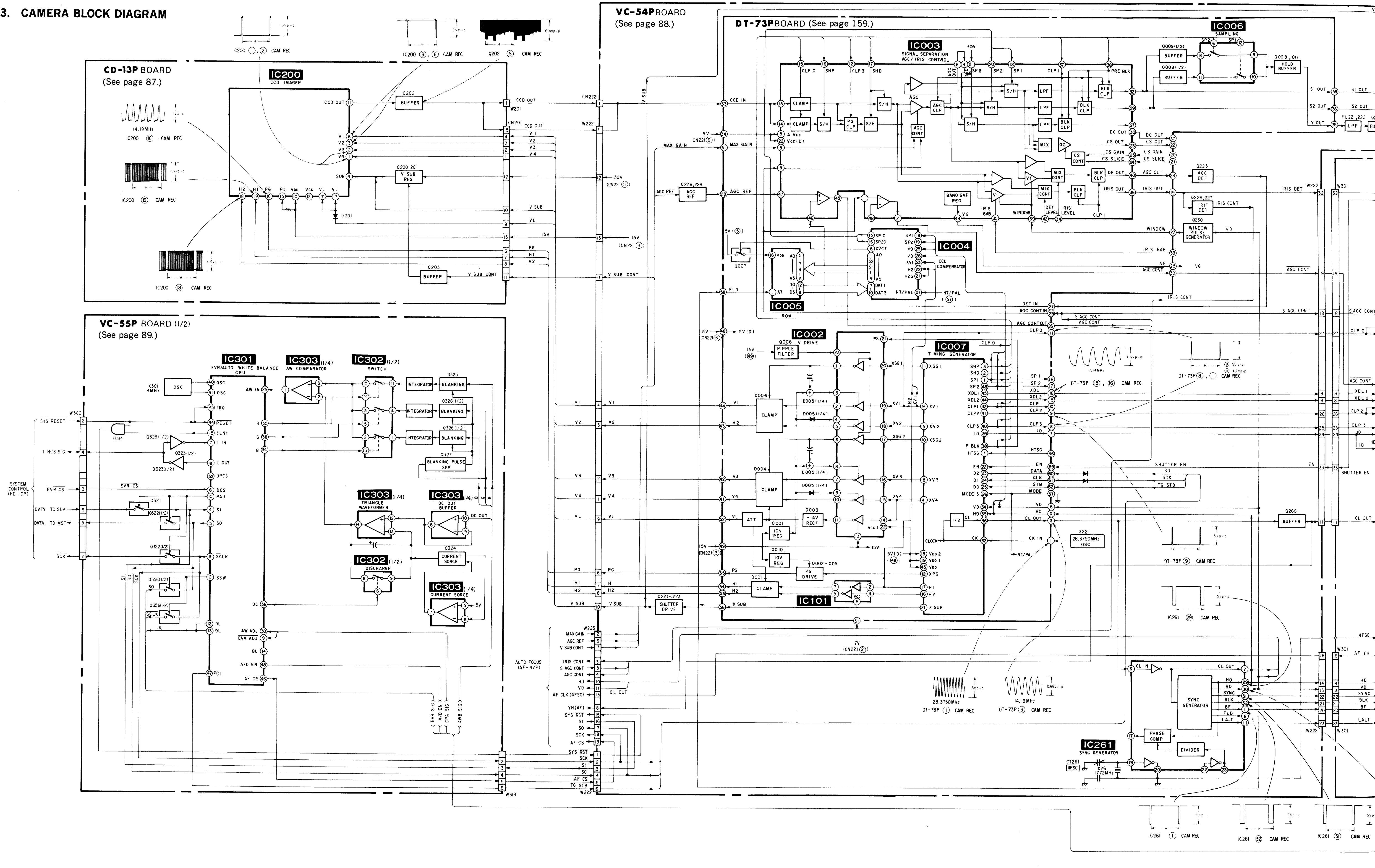

(See page 87.)
CD-13P BOARD
IC200
CCD IMAGER
CCD OUT
H1,H2,V1-V4 PG,V SUB
(See page 88.)
VC-54P BOARD
DT-73P BOARD
SIGNAL SEPARATION IRIS/AGC CONTROL
TIMING GENERATOR
SYNC GENERATOR
IC261
Y,S1,S2
IRIS CONT
AGC CONT
HD,VD
(See page 89.)
VC-55P BOARD
MX-7P BOARD
MATRIX
R,G,B
YH
CP-20P BOARD
PROCESS CHROMA TITLE MIX
R-Y,B-Y
IC304
ENCODER Y TITLE MIX
AD Y
CAM C
CAM Y
TY MIX,TY BLK
TR,TG,TB,C BLK
CLP0,CLP2,CLP3 XDL1,XDL2
4FSC,SYNC,BLK,BF
IC301
EVR/ AUTO WHITE BALANCE CPU
IC302
IC303
AWB DETECT
IC305
EVR
ADJUST VOLTAGE
SO, SCLK,LD
SI,SO,SCK
DATA TO SLVE,DATA TO MASTER,SCK
93.)
P BOARD
AUTO
MANUAL
IC455
AUTO FOCUS PROCESS
S AGC CONT
HD,VD
IRIS VR
(See page 140.)
LI-8P BOARD
LITHIUM BATTERY
(See page 137.)
FD-10P BOARD (1/2)
L13V
IC162
TITLE MEMORY
TITLE A/D
TY MIX,TY BLK
TR,TG,TB,C BLK
HD,VD
DIGITAL TITLE PROCESS
IC161
ND1
LCD
MODE CONTROL
IC101
S101 - 117
KEY MATRIX
VTR POWER
CAM POWER
DEW
(See page 140.)
FC-20P BOARD
S095 - 097
KEY MATRIX
(See page 140.)
FK-15 BOARD
S081 - 092
KEY MATRIX
(See page 127.)
PJ-21P BOARD (1/2)
S902 - 904
KEY MATRIX
(See page 14
SW-94P BOARD
S070,071
KEY MATRIX
POWER START/STOP
FU-66 BOARD
F062
F060
F061
MOTOR UNREG
VTR POWER
VTR UNREG
SS 5V
V1 5V
AUDIO 5V
EVF 5V
CAMERA POWER
CAM 7V
CAM 15V
CAM 30V
CAM 5V
AF UNREG
DC-DC CONVERTER UNIT
VTR UNREG
CAM UNREG
DATA TO SLVE,DATA TO MASTER,SCK
CAM C
CAM Y
DATA TO SLVE, SCK
(See page 109.)
VI-71 BOARD
VOW2,VOB2,BLK
CHARACTER GENERATOR (DATA SCREEN)
IC406
IC407
IC405
EXPANTION PORT
VIDEO, AUDIO CONTROL SIG.
IC409
IC410
Y PROCESS
PB Y RF
REC Y RF
CAM
S-LINE
Y OUT
V OUT
CHARACTER MIX
Y OUT
IC403
IC404
V101
IRIS
(See page 151.)
MK-5 BOARD
IC001
IC002
REC PCM
PB PCM
PCM MARKER PROCESS
IC801
IC802
RF AGC SOFT LIMITTER
HR-3P BOARD
REC/PB AMP
CH1', CH2
CH1
C/AFM/ATF MIX
REC C RF
PB C RF
V1 PB RF
FE ON
FLYING ERASE OSC
FE
MR-20 BOARD
(See page 103.)
DRUM
CH2,CH1'
CH1
FLYING ERASE
AGC OUT Y
NOICAN IN Y
SEL Y
VI-72 BOARD
(See page 117.)
(REC Y)
PB Y
NOISE CANCEL
HD-8P BOARD
COMB FILTER
COMB OUT C
COMB IN C (PB C)
CAM/ S-LINE
PB/V-LINE
REC/PB CHROMA
EE CHROMA
REC
PB
PB CHROMA
CHROMA PROCESS
REC C RF
IC601
IC602
IC604
ATF SERVO
ATF ERROR
IC310
REC ATF
REC AFM
VF-16P BOARD
(See page 155.)
G1
CRT
ELECTRONIC VIEW FINDER
EVF OUT
VIDEO AMP SYNC SEP V OUT H DRIVE
IC951
DV1,DV2
T951
H1
HV
DY
VH
H OUT
DH1,DH2
(See page 129.)
FP-90 BOARD
REC PROOF
MP HG
ME/MP
TAPE TOP SENSOR
D301 TAPE LED
T REEL FG SENSOR
(See page 129.)
CC-18P BOARD
INPUT MATRIX
MODE SW 0-2
CC-DOWN
TOP SENS
TOP/END LED
T REEL FG
S REEL FG
END SENS
FP-89 BOARD
(See page 129.)
S REEL FG SENSOR
TAPE END SENSOR
MODE SWITCH
IC001
SERVO/MECHANISM CONTROL
M IN0 - M IN3, M OUT 0, M OUT 1
MECHANISM CONTROL
FE ON
LOADING MOTOR
L.M LOAD
L.M UNLOAD
IC002
LOADING MOTOR DRIVE
LD,UNLD
M901 DRUM MOTOR
DRUM PG,FG
IC201
DRUM MOTOR DRIVE
DRUM ON, DRUM RVS
DRUM BRAKE,DRUM ACC
IC204
IC203 (1/2)
INTEGRATOR
DRUM ER
PWM POWER DRIVE
M902 CAPSTAN MOTOR
CAPSTAN FG
IC202
CAPSTAN MOTOR DRIVE
IC203 (1/2)
LPF
CAP DA,CAP PWM
SERVO
CAP FWD/RVS,CAP ON
IC200
FG/PG AMP
DRUM FG, DRUM PG
CAP FG
ATF ERROR
SS-88P BOARD (See page 130.)

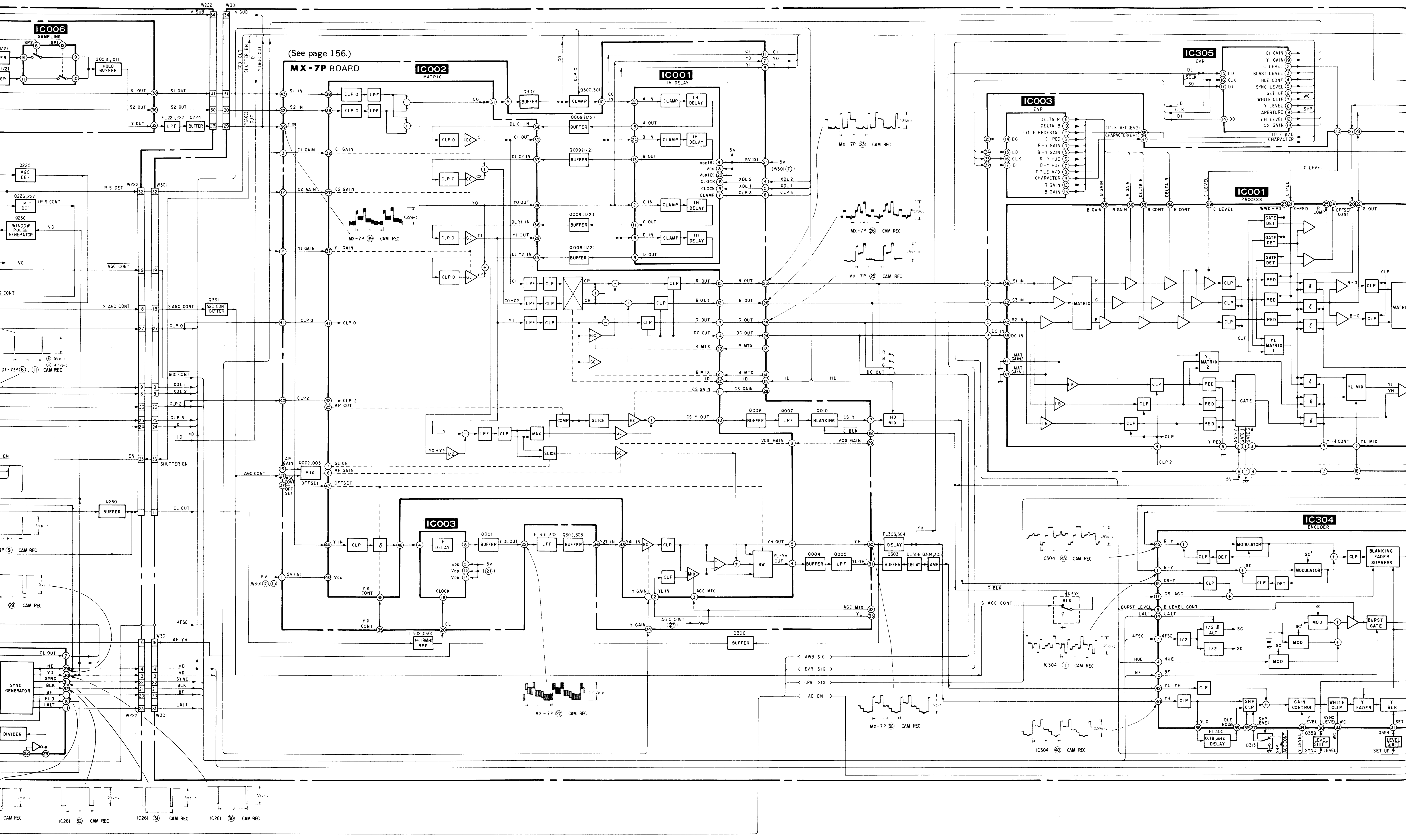

(See page 140.)
LI-8P BOARD
LITHIUM BATTERY
(See page 137.)
FD-10P BOARD (1/2)
L13V
IC162
TITLE MEMORY
NDI
LCD
MODE CONTROL
S101 – 117
KEY MATRIX
TITLE A/D
TY MIX, TY BLK
TR, TG, TB, C BLK
DIGITAL TITLE PROCESS
HD, VD
VTR POWER
CAM POWER
DEW
IC161
IC101
DATA TO SLVE, DATA TO MASTER, SCK
04
AD Y
CAM C
CAM Y
TY MIX, TY BLK
(See page 140.)
FC-20P BOARD
S095 – 097
KEY MATRIX
(See page 140.)
FK-15 BOARD
S081 – 092
KEY MATRIX
(See page 127.)
PJ-21P BOARD (1/2)
S902 - 904
KEY MATRIX
(See page 140.)
SW-94P BOARD
S070, 071
KEY MATRIX POWER (START/STOP)
(See page 140.)
JC-3P BOARD (1/2)
S072
START /STOP
LINCS SIG
J070
REMOTE
FU-66 BOARD
(See page 129.)
F062
F060
F061
MAIN BATTERY
MOTOR UNREG
VTR POWER
VTR UNREG
SS 5V
VI 5V
AUDIO 5V
EVF 5V
CAMERA POWER
CAM 7V
CAM 15V
CAM 30V
CAM 5V
AF UNREG
DC-DC CONVERTER UNIT
VTR UNREG
CAM UNREG
DATA TO SLVE, DATA TO MASTER, SCK
(See page 129.)
FP-90 BOARD
(See page 129.)
CC-18P BOARD
REC PROOF
MP HG
ME/MP
INPUT MATRIX
MODE SW 0-2
CC-DOWN
TAPE TOP SENSOR
TOP SENS
TOP/END LED
D301 TAPE LED
T REEL FG SENSOR
T REEL FG
S REEL FG
END SENS
FP-89 BOARD
(See page 129.)
S REEL FG SENSOR
TAPE END SENSOR
MODE SWITCH
IC001
SERVO/MECHANISM CONTROL
M IN0 – M IN3, M OUT 0, M OUT 1
MECHANISM CONTROL
SERVO
DEW(+)
DEW SENSOR
FE ON
IC002
LOADING MOTOR DRIVE
LD, UNLD
LOADING MOTOR
L.M LOAD
L.M UNLOAD
IC201
DRUM MOTOR DRIVE
DRUM ON, DRUM RVS
DRUM BRAKE, DRUM ACC
M901 DRUM MOTOR
DRUM PG.FG
IC204
PWM POWER DRIVE
IC203 (1/2)
INTEGRATOR
DRUM ER
IC202
CAPSTAN MOTOR DRIVE
IC203 (1/2)
LPF
CAP DA, CAP PWM
M902 CAPSTAN MOTOR
CAPSTAN FG
CAP FWD/RVS, CAP ON
IC200
FG/PG AMP
DRUM FG, DRUM PG
CAP FG
ATF ERROR
SS-88P BOARD (See page 130.)
See page 151.)
MK-5 BOARD
IC001
IC002
REC PCM
PB PCM
PCM MARKER PROCESS
801
802
HR-3P BOARD
F AGC LIMITTER
REC/PB AMP
CH1', CH2
CH1
DRUM
CH2, CH1'
CH1
FLYING ERASE
FE ON
FLYING ERASE OSC
FE
MR-20 BOARD
(See page 103.)
VF-16P BOARD
(See page 155.)
EVF OUT
VIDEO AMP SYNC SEP V OUT H DRIVE
IC951
G1
CRT
ELECTRONIC VIEW FINDER
DV1, DV2
T951
H1
HV
DY
VH
H OUT
DH1, DH2

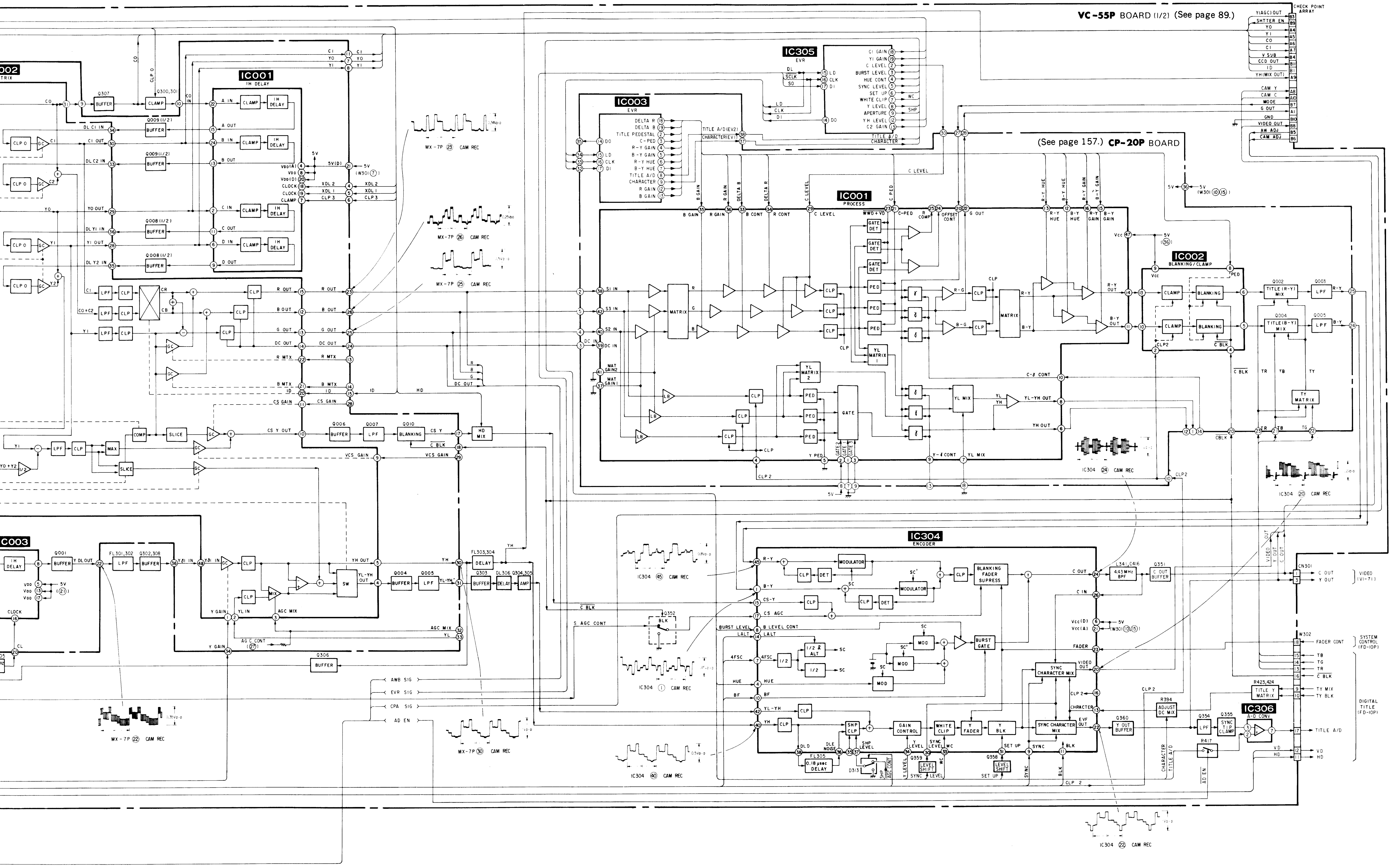
3-3. CAMERA BLOCK DIAGRAM


CD-13P BOARD
(See page 87.)
IC200
CCD IMAGER
CCD OUT
Q202
BUFFER
Q200, 201
V SUB REG
Q203
BUFFER
D201
IC200 ①, ② CAM REC
IC200 ③, ⑥ CAM REC
Q202 ⑤ CAM REC
14.19MHz
IC200 ⑯ CAM REC
IC200 ⑲ CAM REC
IC200 ⑱ CAM REC
VC-55P BOARD (1/2)
(See page 89.)
IC301
EVR/AUTO WHITE BALANCE CPU
IC303 (1/4)
AW COMPARATOR
IC302 (1/2)
SWITCH
INTEGRATOR
BLANKING
Q325
Q326(1/2)
Q327
BLANKING PULSE SEP
IC303 (1/4)
TRIANGLE WAVEFORMER
IC303 (1/4)
DC OUT BUFFER
IC302 (1/2)
DISCHARGE
Q324
CURRENT SORCE
IC303 (1/4)
CURRENT SORCE
X301
4MHz
OSC
W302
SYS RESET
LINCS SIG
SYSTEM CONTROL (FD-10P)
EVR CS
DATA TO SLV
DATA TO MST
SCK
D314
Q323(1/2)
Q321
Q322(1/2)
Q356(1/2)
EVR SIG
A/D EN
CPA SIG
AWB SIG
VC-54P BOARD
(See page 88.)
DT-73P BOARD (See page 159.)
IC003
SIGNAL SEPARATION AGC/IRIS CONTROL
IC006
SAMPLING
Q009(1/2)
BUFFER
Q008, 011
HOLD BUFFER
CLAMP
S/H
PG CLP
AGC
AGC CLP
AGC CONT
LPF
BLK CLP
MIX
CS CONT
MIX CONT
DET LEVEL
IRIS LEVEL
BAND GAP REG
Q228, 229
AGC REF
Q225
AGC DET
Q226, 227
IRIS DET
Q230
WINDOW PULSE GENERATOR
IC004
CCD COMPENSATOR
IC005
ROM
Q007
IC002
V DRIVE
Q006
RIPPLE FILTER
IC007
TIMING GENERATOR
D006
CLAMP
D004
CLAMP
D005(1/4)
D003
-14V RECT
ATT
Q001
10V REG
Q010
10V REG
Q002-005
PG DRIVE
D001
CLAMP
IC101
Q221~223
SHUTTER DRIVE
X221
28.3750MHz
OSC
Q260
BUFFER
IC261
SYNC GENERATOR
SYNC GENERATOR
PHASE COMP
DIVIDER
CT261
X261
17.72MHz
7.14MHz
DT-73P ⑤, ⑯ CAM REC
DT-73P ⑧, ⑪ CAM REC
DT-73P ⑨ CAM REC
IC261 ㉙ CAM REC
28.3750MHz
DT-73P ① CAM REC
14.19MHz
DT-73P ③ CAM REC
IC261 ① CAM REC
IC261 ㉜ CAM REC
IC261 ㉛ CAM REC
AUTO FOCUS (AF-47P)
MAX GAIN
AGC REF
V SUB CONT
IRIS CONT
S AGC CONT
AGC CONT
HD
VD
AF CLK (4FSC)
YH(AF)
SYS RST
SI
SO
SCK
AF CS
TG STB
W223
W222
W301
CN222
CN221
S1 OUT
S2 OUT
Y OUT
FL221,222
LPF
IRIS DET
SHUTTER EN
CL OUT
AF YH
SYNC
BLK
BF
LALT

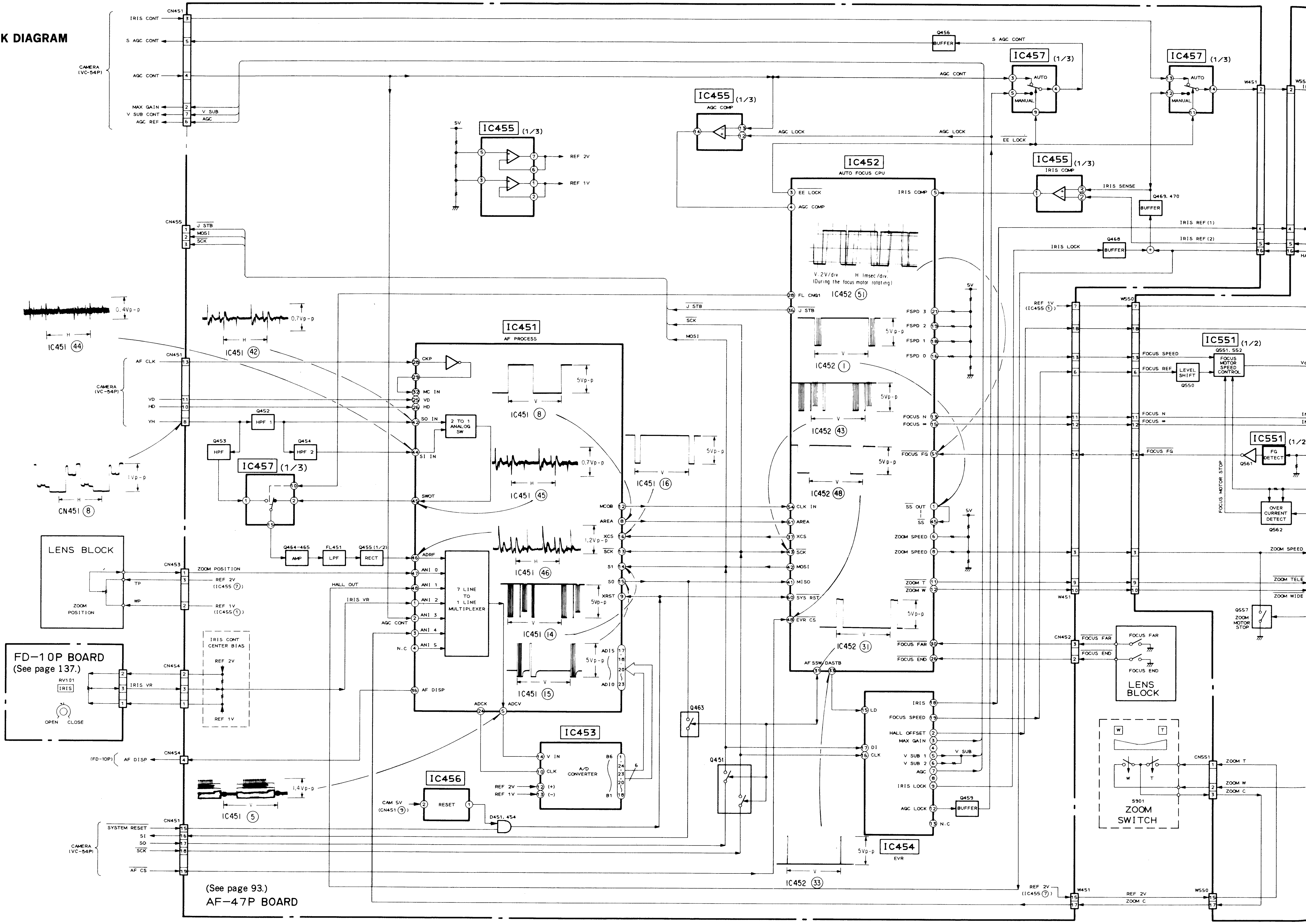
3-3. CAMERA BLOCK DIAGRAM

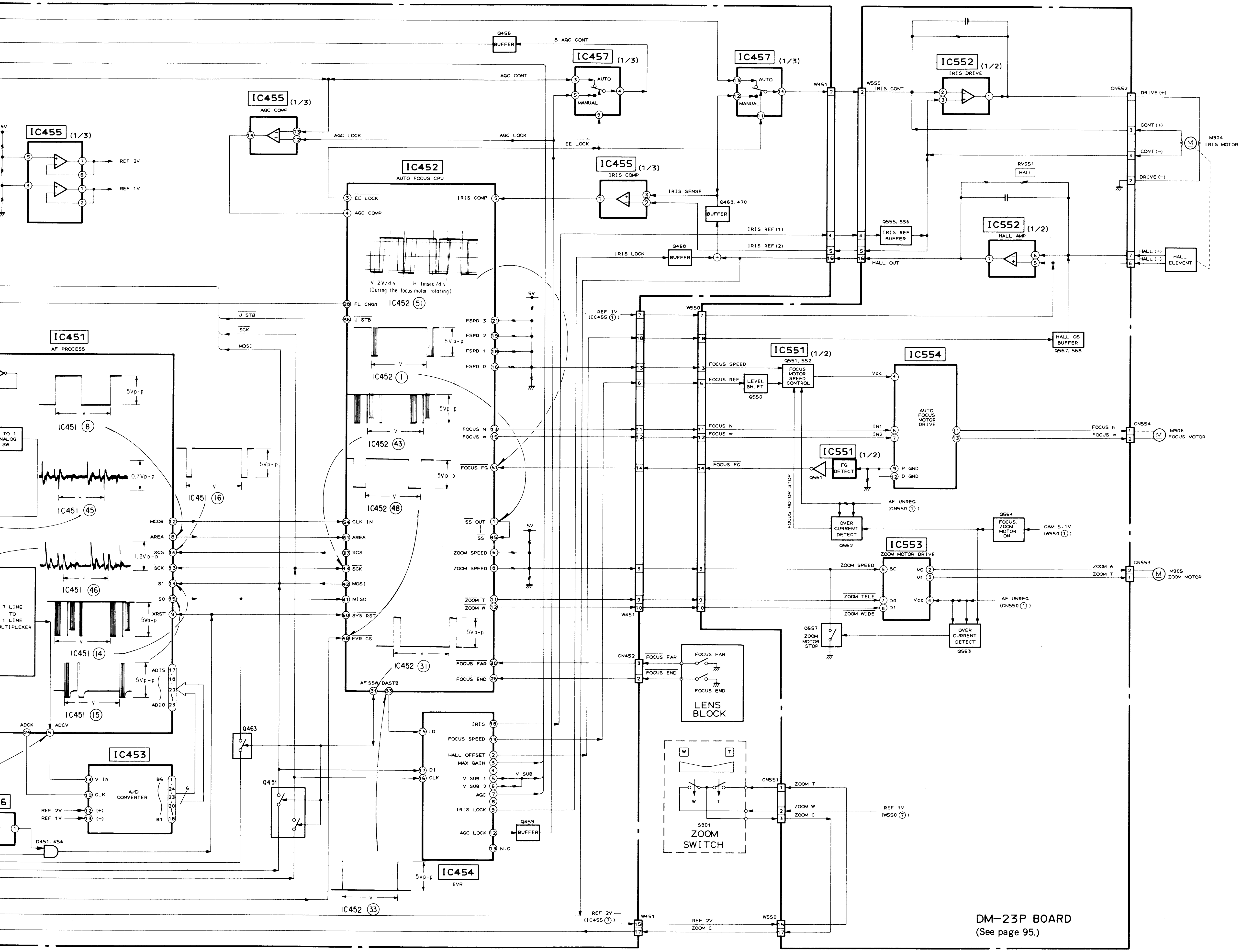

CD-13P BOARD
(See page 87.)
IC200
CCD IMAGER
CCD OUT
BUFFER
Q202
V SUB REG
Q200,201
D201
BUFFER
Q203
V SUB CONT
14.19MHz
IC200 ⑯ CAM REC
IC200 ⑲ CAM REC
IC200 ⑱ CAM REC
IC200 ①, ② CAM REC
IC200 ③, ⑥ CAM REC
Q202 ⑤ CAM REC
6.4Vp-p
VC-54P BOARD
(See page 88.)
DT-73P BOARD (See page 159.)
IC003
SIGNAL SEPARATION
AGC/IRIS CONTROL
IC006
SAMPLING
BUFFER
Q009(1/2)
HOLD BUFFER
Q008, 011
CLAMP
S/H
PG CLP
AGC
AGC CONT
LPF
BLK CLP
MIX
MIX CONT
CS CONT
BAND GAP REG
AGC REF
Q228,229
MAX GAIN
S1 OUT
S2 OUT
Y OUT
DC OUT
CS OUT
CS GAIN
CS SLICE
AGC OUT
IRIS OUT
IRIS DET
AGC DET
Q225
IRIS DET
Q226,227
WINDOW PULSE GENERATOR
Q230
IC004
CCD COMPENSATOR
IC005
ROM
Q007
IC002
V DRIVE
RIPPLE FILTER
Q006
IC007
TIMING GENERATOR
CLAMP
D006
D004
ATT
10V REG
Q001
Q010
-14V RECT
D003
D005(1/4)
PG DRIVE
Q002-005
CLAMP
D001
IC101
SHUTTER DRIVE
Q221~223
X221
28.3750MHz OSC
1/2
BUFFER
Q260
SHUTTER EN
SO
SCK
TG STB
DT-73P ⑤, ⑯ CAM REC
DT-73P ⑧, ⑪ CAM REC
DT-73P ⑨ CAM REC
28.3750MHz
DT-73P ① CAM REC
14.19MHz
DT-73P ③ CAM REC
IC261 ㉙ CAM REC
IC261
SYNC GENERATOR
SYNC GENERATOR
PHASE COMP
DIVIDER
CT261
4FSC
X261
17.72MHz
IC261 ① CAM REC
IC261 ㉜ CAM REC
IC261 ㉛ CAM REC
VC-55P BOARD (1/2)
(See page 89.)
IC301
EVR/AUTO WHITE BALANCE CPU
X301
4MHz
OSC
IC303 (1/4)
AW COMPARATOR
IC302 (1/2)
SWITCH
INTEGRATOR
BLANKING
Q325
Q326(1/2)
BLANKING PULSE SEP
Q327
IC303 (1/4)
TRIANGLE WAVEFORMER
IC303 (1/4)
DC OUT BUFFER
CURRENT SORCE
Q324
IC302 (1/2)
DISCHARGE
IC303 (1/4)
CURRENT SORCE
SYSTEM CONTROL (FD-10P)
SYS RESET
LINCS SIG
EVR CS
DATA TO SLV
DATA TO MST
SCK
W302
Q314
Q323(1/2)
Q321
Q322(1/2)
Q356(1/2)
EVR SIG
A/D EN
CPA SIG
AWB SIG
AUTO FOCUS (AF-47P)
MAX GAIN
AGC REF
V SUB CONT
IRIS CONT
S AGC CONT
AGC CONT
HD
VD
AF CLK (4FSC)
YH(AF)
SYS RST
SI
SO
SCK
AF CS
TG STB
W223
W222
W301
CN222
CN201
W201
CN221


(See page 156.)
MX-7P BOARD
IC006
SAMPLING
HOLD BUFFER
Q008, 011
Q225
AGC DET
Q226,227
IRIS DET
Q230
WINDOW PULSE GENERATOR
IRIS CONT
IRIS DET
AGC CONT
S AGC CONT
W222
W301
V SUB
CCD OUT
SHUTTER EN
ID
Y(AGC) OUT
S1 OUT
S2 OUT
Y OUT
FL221,222
Q224
LPF
BUFFER
Q361
AGC CONT BUFFER
CLP 0
XDL 1
XDL 2
CLP 2
CLP 3
HD
SHUTTER EN
Q260
BUFFER
CL OUT
4FSC
AF YH
SYNC GENERATOR
VD
SYNC
BLK
BF
FLD
LALT
DIVIDER
DT-73P ⑧, ⑪ CAM REC
IC261 ㉜ CAM REC
IC261 ㉛ CAM REC
IC261 ㉚ CAM REC
IC002
MATRIX
S1 IN
S2 IN
Y IN
C1 GAIN
C2 GAIN
Y1 GAIN
CLP 0
LPF
GC
CO
C1
C2
YO
Y1
Y2
MX-7P ㊴ CAM REC
0.22Vp-p
AP GAIN
AGC CONT
OFF SET
Q002,003
MIX
SLICE
OFFSET
AP CUT
Q307
BUFFER
Q300,301
CLAMP
Q009(1/2)
Q008(1/2)
DL C1 IN
C1 OUT
DL C2 IN
YO OUT
DL Y1 IN
Y1 OUT
DL Y2 IN
IC001
1H DELAY
A IN
A OUT
B IN
B OUT
C IN
C OUT
D IN
D OUT
CLAMP
1H DELAY
VDD(A)
VDD
VDD(D)
CLOCK
5V(D)
5V
(W301 ⑦)
R OUT
B OUT
G OUT
DC OUT
R MTX
B MTX
CS GAIN
CS Y OUT
VCS GAIN
COMP
MAX
Y0+Y2
1/2
Q006
BUFFER
Q007
LPF
Q010
BLANKING
CS Y
C BLK
HD MIX
IC003
Y IN
CLP
γ
1H DELAY
Q001
BUFFER
Y DL OUT
FL301,302
Q302,308
Yγ1 IN
YH OUT
YL-YH OUT
SW
Y GAIN
YL IN
AGC MIX
Yγ CONT
CLOCK
L302,C305
14.19MHz BPF
CL
AG C CONT
Q004
Q005
YL-YH
FL303,304
DELAY
Q303
DL306
Q304,305
AMP
YH
YL
Q306
BUFFER
MX-7P ㉓ CAM REC
MX-7P ㉖ CAM REC
MX-7P ㉕ CAM REC
MX-7P ㉒ CAM REC
MX-7P ㉚ CAM REC
AWB SIG
EVR SIG
CPA SIG
AD EN
IC305
EVR
DL
SCLK
S0
LD
CLK
DI
DO
C1 GAIN
Y1 GAIN
C LEVEL
BURST LEVEL
HUE CONT
SYNC LEVEL
SET UP
WHITE CLIP
Y LEVEL
APERTURE
YH LEVEL
C2 GAIN
WC
SHP
IC003
EVR
DELTA R
DELTA B
TITLE PEDESTAL
C-PED
R-Y GAIN
B-Y GAIN
R-Y HUE
B-Y HUE
TITLE A/D
CHARACTER
R GAIN
B GAIN
TITLE A/D(EV2)
CHARACTER(EV1)
TITLE A/D CHARACTER
IC001
PROCESS
B GAIN
R GAIN
B CONT
R CONT
C LEVEL
WWD+VD
C-PED
R COMP
OFFSET CONT
G OUT
GATE DET
S1 IN
S3 IN
S2 IN
DC IN
MATRIX
PED
R-G
B-G
YL MATRIX 1
YL MATRIX 2
MAT GAIN2
MAT GAIN1
LB
GATE
YL MIX
Y-γ CONT
Y PED
CLP 2
IC304
ENCODER
R-Y
B-Y
CS-Y
CS AGC
B LEVEL CONT
LALT
4FSC
1/2 & ALT
HUE
BF
YL-YH
YH
MODULATOR
DET
SC
MOD
BLANKING FADER SUPRESS
BURST GATE
SHP CLP
GAIN CONTROL
WHITE CLIP
Y FADER
Y BLK
DL D
DLE NOISE
FL305
0.18μsec DELAY
Q313
SHP LEVEL
Y LEVEL
SYNC LEVEL
Q359
LEVEL SHIFT
Q358
SET UP
Q352
BLK
C BLK
S AGC CONT
BURST LEVEL
IC304 ㊺ CAM REC
IC304 ① CAM REC
IC304 ㊵ CAM REC


VC-55P BOARD (1/2) (See page 89.)
(See page 157.) CP-20P BOARD
CHECK POINT ARRAY
IC001 1H DELAY
IC002 MATRIX
IC003
IC305 EVR
IC003 EVR
IC001 PROCESS
IC002 BLANKING/CLAMP
IC304 ENCODER
IC306 A-D CONV
CN301
VIDEO (VI-71)
SYSTEM CONTROL (FD-10P)
DIGITAL TITLE (FD-10P)
MX-7P ㉓ CAM REC
MX-7P ㉖ CAM REC
MX-7P ㉕ CAM REC
MX-7P ㉒ CAM REC
MX-7P ㉚ CAM REC
IC304 ㉔ CAM REC
IC304 ⑳ CAM REC
IC304 ㊺ CAM REC
IC304 ① CAM REC
IC304 ㊵ CAM REC
IC304 ㉒ CAM REC

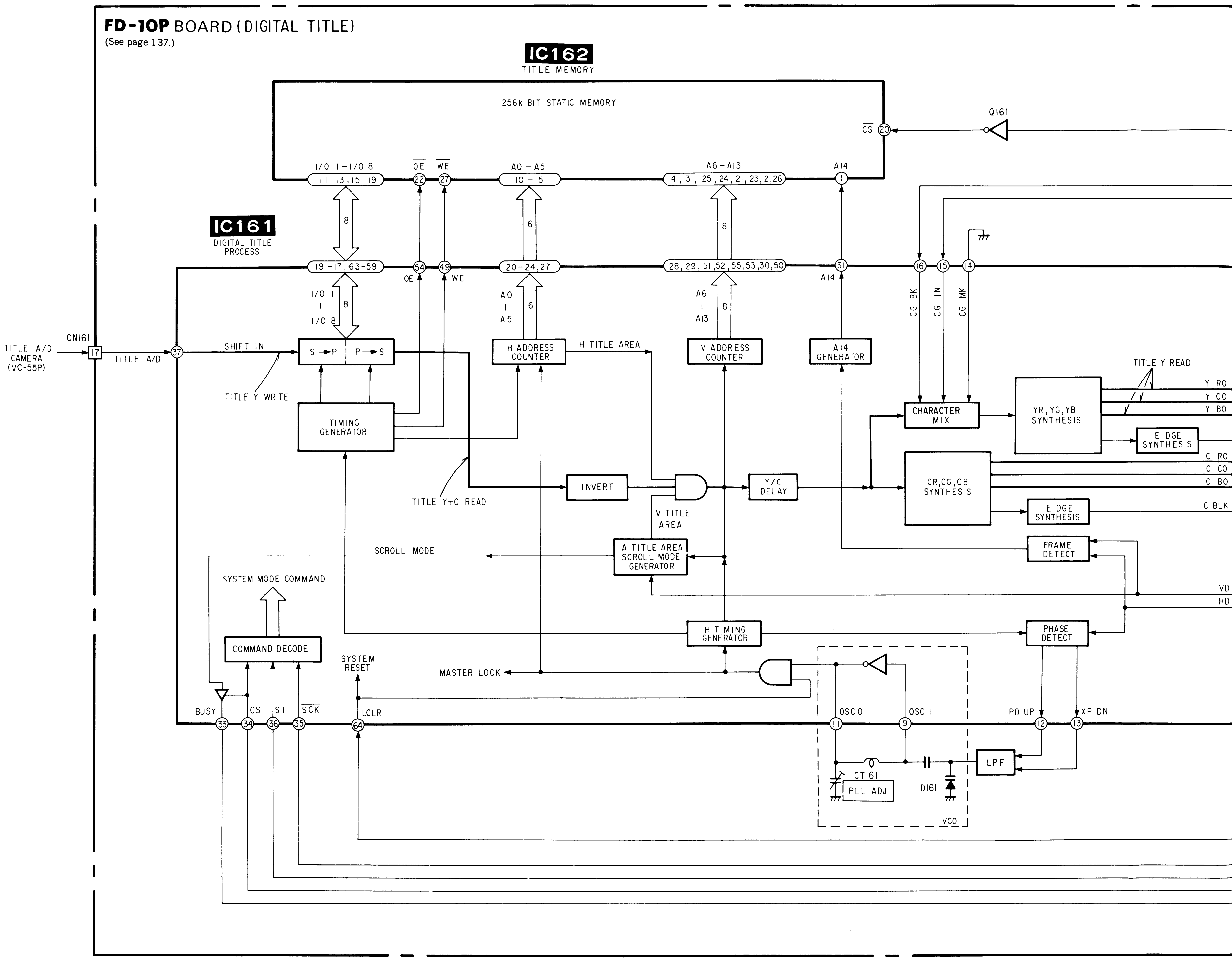
3-4. AUTO FOCUS BLOCK DIAGRAM

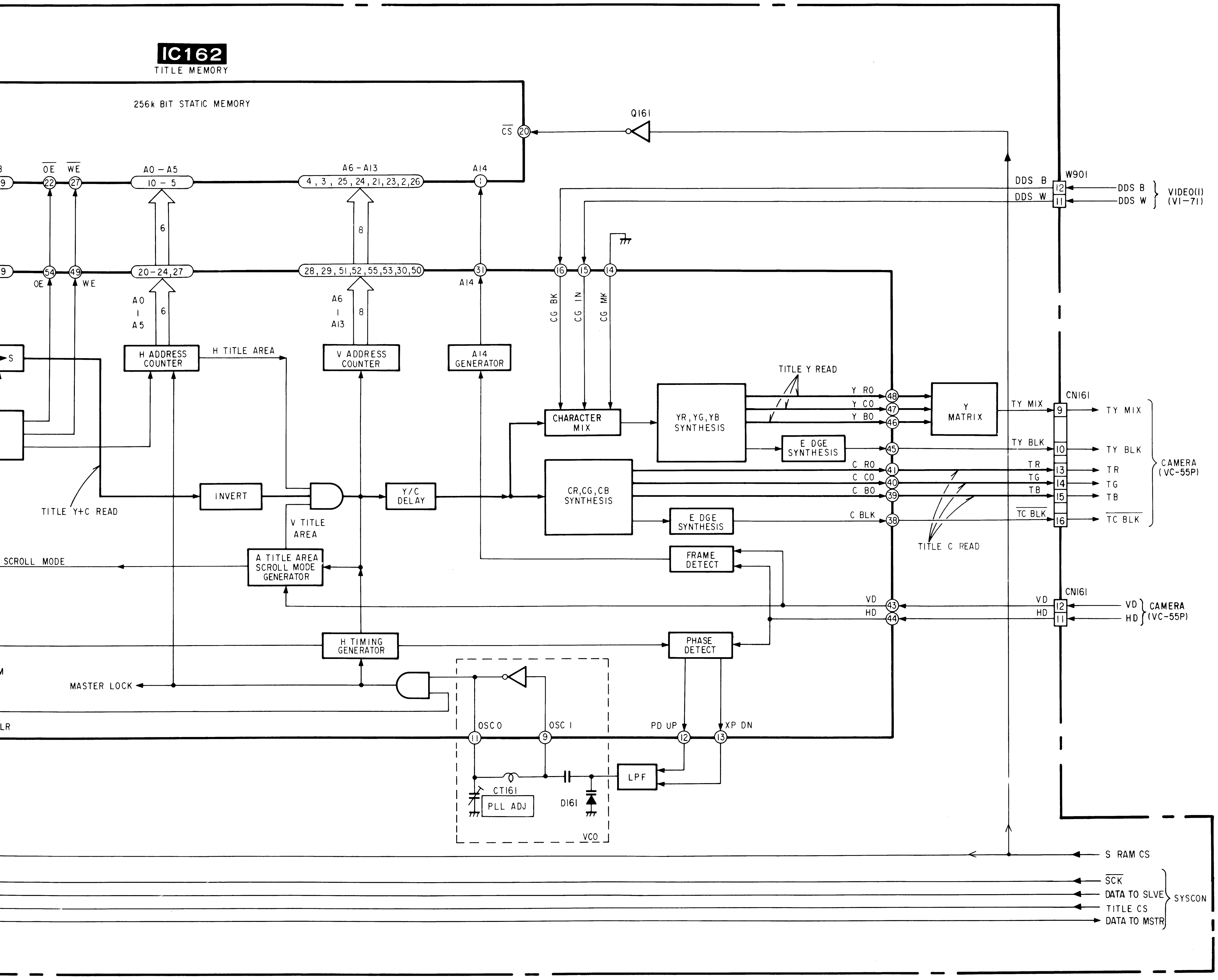

CAMERA (VC-54P)
CN451
IRIS CONT
S AGC CONT
AGC CONT
MAX GAIN
V SUB CONT
AGC REF
V SUB
AGC
Q456 BUFFER
S AGC CONT
IC457 (1/3)
AUTO
MANUAL
AGC CONT
IC455 (1/3)
AGC COMP
AGC LOCK
EE LOCK
W451
IC455 (1/3)
5V
REF 2V
REF 1V
IC452
AUTO FOCUS CPU
EE LOCK
AGC COMP
IRIS COMP
IC455 (1/3)
IRIS COMP
IRIS SENSE
Q469, 470 BUFFER
IRIS REF (1)
IRIS REF (2)
Q468 BUFFER
IRIS LOCK
CN455
J STB
MOSI
SCK
V. 2V/div H 1msec/div.
(During the focus motor rotating)
FL CNG1
IC452 (51)
J STB
FSPD 3
FSPD 2
FSPD 1
FSPD 0
5Vp-p
IC452 (1)
FOCUS N
FOCUS +
IC452 (43)
FOCUS FG
IC452 (48)
SS OUT
SS
ZOOM SPEED
ZOOM SPEED
ZOOM T
ZOOM W
FOCUS FAR
FOCUS END
IC452 (31)
AF SSW/DASTB
0.4Vp-p
H
IC451 (44)
0.7Vp-p
IC451 (42)
AF CLK
CAMERA (VC-54P)
VD
HD
YH
IC451
AF PROCESS
CKP
MC IN
VD
HD
SO IN
SI IN
2 TO 1 ANALOG SW
Q452 HPF 1
Q453 HPF
Q454 HPF 2
IC457 (1/3)
1Vp-p
CN451 (8)
IC451 (8)
IC451 (45)
SWOT
IC451 (16)
MCOB
AREA
XCS
SCK
SI
SO
XRST
CLK IN
AREA
XCS
SCK
MOSI
MISO
SYS RST
EVR CS
Q464-465 AMP
FL451 LPF
Q455 (1/2) RECT
ADRF
1.2Vp-p
IC451 (46)
LENS BLOCK
TP
WP
ZOOM POSITION
CN453
ZOOM POSITION
REF 2V (IC455 (7))
REF 1V (IC455 (1))
HALL OUT
IRIS VR
AGC CONT
ANI 0
ANI 1
ANI 2
ANI 3
ANI 4
ANI 5
N.C
7 LINE TO 1 LINE MULTIPLEXER
IC451 (14)
ADI5
ADI0
IC451 (15)
FD-10P BOARD
(See page 137.)
RV101
IRIS
OPEN CLOSE
CN454
IRIS VR
IRIS CONT CENTER BIAS
REF 2V
REF 1V
AF DISP
ADCK
ADCV
IC453
V IN
CLK
REF 2V
REF 1V
A/D CONVERTER
B6
B1
Q463
Q451
(FD-10P)
AF DISP
1.4Vp-p
IC451 (5)
IC456
RESET
CAM 5V (CN451 (9))
D451, 454
CAMERA (VC-54P)
SYSTEM RESET
SI
SO
SCK
AF CS
IC454
EVR
LD
DI
CLK
IRIS
FOCUS SPEED
HALL OFFSET
MAX GAIN
V SUB 1
V SUB 2
AGC
IRIS LOCK
AGC LOCK
N.C
Q459 BUFFER
V SUB
IC452 (33)
(See page 93.)
AF-47P BOARD
REF 1V (IC455 (1))
W550
IC551 (1/2)
Q551, 552
FOCUS MOTOR SPEED CONTROL
FOCUS SPEED
FOCUS REF
LEVEL SHIFT
Q550
FOCUS N
FOCUS +
FOCUS FG
IC551 (1/2)
FG DETECT
Q561
FOCUS MOTOR STOP
OVER CURRENT DETECT
Q562
ZOOM SPEED
ZOOM TELE
ZOOM WIDE
Q557
ZOOM MOTOR STOP
CN452
FOCUS FAR
FOCUS END
LENS BLOCK
S901
ZOOM SWITCH
CN551
ZOOM T
ZOOM W
ZOOM C
REF 2V (IC455 (7))
W451
REF 2V
ZOOM C


Q456
BUFFER
S AGC CONT
AGC CONT
IC457 (1/3)
AUTO
MANUAL
IC455 (1/3)
AGC COMP
AGC LOCK
EE LOCK
IC455 (1/3)
REF 2V
REF 1V
IC452
AUTO FOCUS CPU
EE LOCK
AGC COMP
IRIS COMP
V. 2V/div H 1msec/div.
(During the focus motor rotating)
IC452 (51)
FL CNG1
J STB
SCK
MOSI
FSPD 3
FSPD 2
FSPD 1
FSPD 0
5Vp-p
IC452 ①
IC452 (43)
IC452 (48)
FOCUS N
FOCUS ∞
FOCUS FG
SS OUT
SS
ZOOM SPEED
ZOOM T
ZOOM W
IC452 (31)
FOCUS FAR
FOCUS END
AF SSW
DASTB
CLK IN
AREA
XCS
SCK
MOSI
MISO
SYS RST
EVR CS
IC451
AF PROCESS
IC451 ⑧
IC451 (45)
IC451 (16)
IC451 (46)
IC451 (14)
IC451 (15)
0.7Vp-p
1.2Vp-p
MCOB
AREA
XCS
SCK
S1
S0
XRST
ADI5
ADI0
TO 1 ANALOG SW
7 LINE TO 1 LINE MULTIPLEXER
ADCK
ADCV
IC453
A/D CONVERTER
V IN
CLK
REF 2V
REF 1V
B6
B1
D451, 454
Q463
Q451
IC454
EVR
LD
DI
CLK
IRIS
FOCUS SPEED
HALL OFFSET
MAX GAIN
V SUB 1
V SUB 2
V SUB
AGC
IRIS LOCK
AGC LOCK
N.C
Q459
BUFFER
IC452 (33)
IC457 (1/3)
IC455 (1/3)
IRIS COMP
IRIS SENSE
Q469, 470
BUFFER
Q468
BUFFER
IRIS LOCK
IRIS REF (1)
IRIS REF (2)
W451
W550
IRIS CONT
HALL OUT
IC552 (1/2)
IRIS DRIVE
IC552 (1/2)
HALL AMP
Q555, 556
IRIS REF BUFFER
RV551
HALL
CN552
DRIVE (+)
CONT (+)
CONT (-)
DRIVE (-)
HALL (+)
HALL (-)
HALL ELEMENT
M904
IRIS MOTOR
REF 1V (IC455 ①)
HALL OS BUFFER
Q567, 568
IC551 (1/2)
Q551, 552
FOCUS MOTOR SPEED CONTROL
FOCUS SPEED
FOCUS REF
LEVEL SHIFT
Q550
IC554
AUTO FOCUS MOTOR DRIVE
Vcc
IN1
IN2
P GND
D GND
IC551 (1/2)
FG DETECT
Q561
FOCUS MOTOR STOP
AF UNREG (CN550 ①)
OVER CURRENT DETECT
Q562
Q564
FOCUS, ZOOM MOTOR ON
CAM 5.1V (W550 ①)
CN554
M906
FOCUS MOTOR
IC553
ZOOM MOTOR DRIVE
SC
M0
M1
D0
D1
ZOOM TELE
ZOOM WIDE
Q557
ZOOM MOTOR STOP
OVER CURRENT DETECT
Q563
AF UNREG (CN550 ①)
CN553
M905
ZOOM MOTOR
CN452
FOCUS FAR
FOCUS END
LENS BLOCK
W
T
S901
ZOOM SWITCH
CN551
ZOOM T
ZOOM W
ZOOM C
REF 1V (W550 ⑦)
REF 2V (IC455 ⑦)
REF 2V
ZOOM C
5V

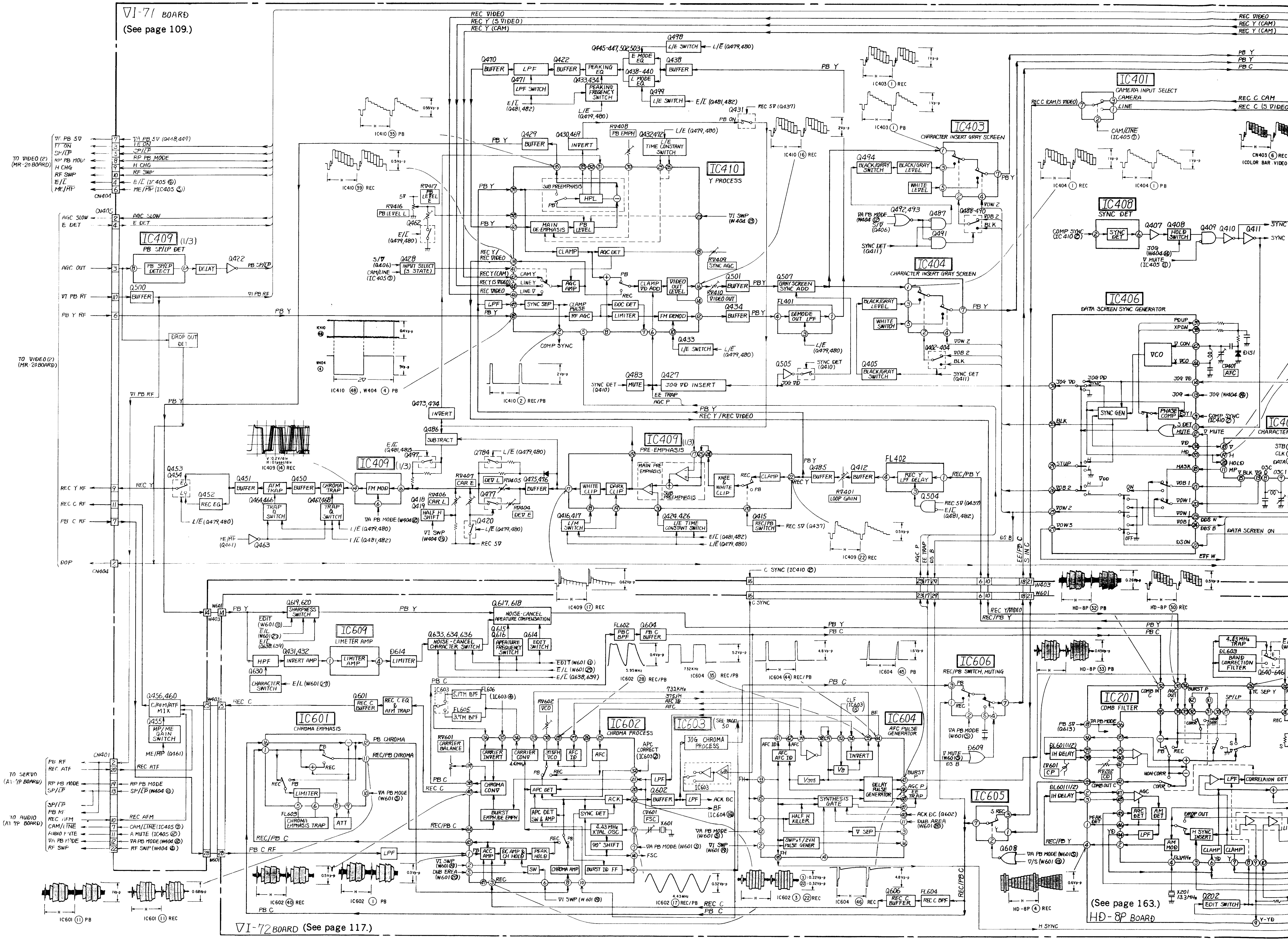
DM-23P BOARD
(See page 95.)

3-5. DIGITAL TITLER BLOCK DIAGRAM

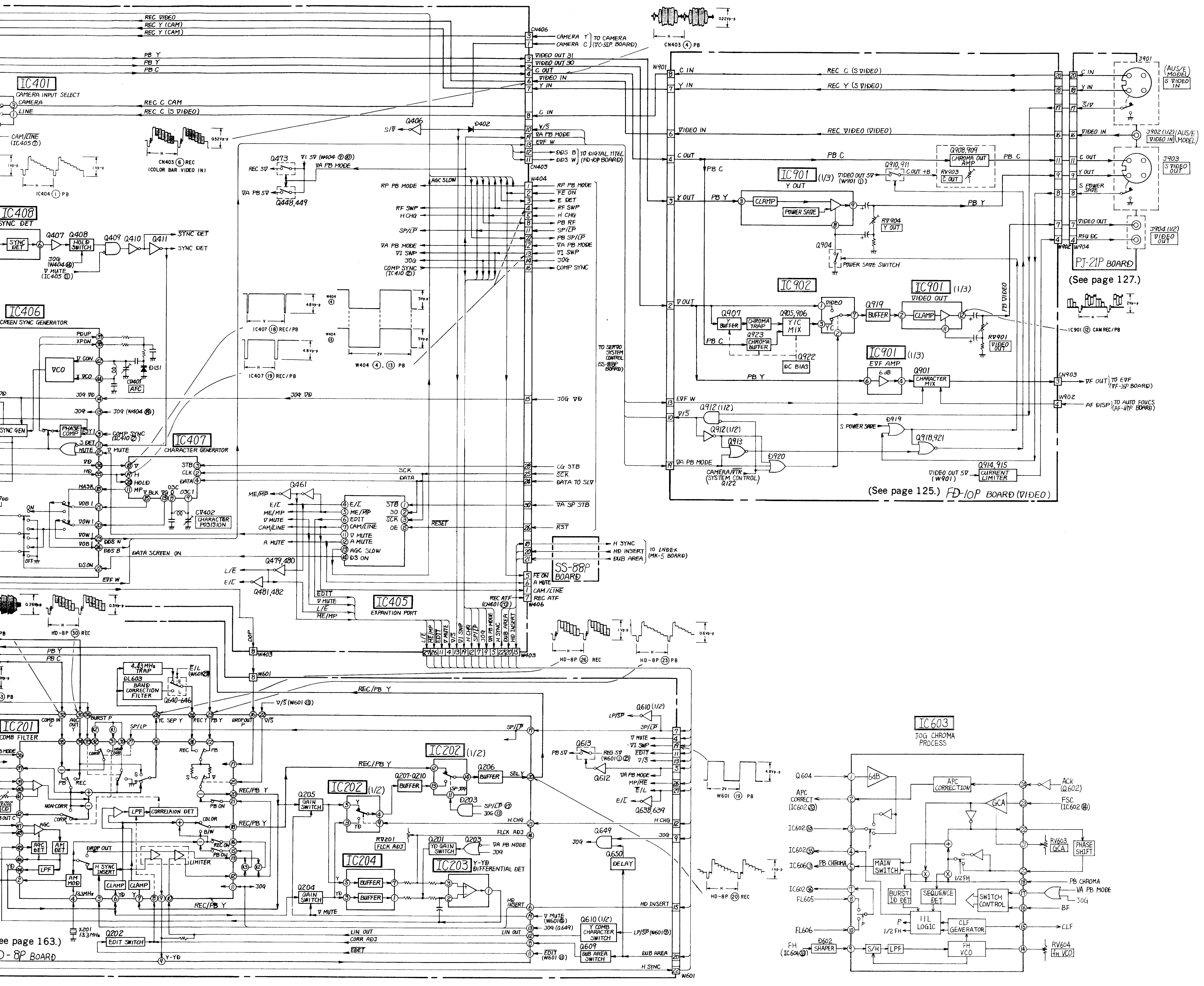

FD-10P BOARD (DIGITAL TITLE)
(See page 137.)
IC162
TITLE MEMORY
256k BIT STATIC MEMORY
CS 20
Q161
I/O 1 – I/O 8
11–13, 15–19
OE 22
WE 27
A0 – A5
10 – 5
A6 – A13
4, 3, 25, 24, 21, 23, 2, 26
A14
1
8
6
8
IC161
DIGITAL TITLE PROCESS
19 – 17, 63 – 59
54
49
OE
WE
20 – 24, 27
28, 29, 51, 52, 55, 53, 30, 50
31
A14
16
15
14
CG BK
CG IN
CG MK
I/O 1
I/O 8
A0
A5
A6
A13
TITLE A/D CAMERA (VC-55P)
CN161
17
TITLE A/D
37
SHIFT IN
TITLE Y WRITE
S → P
P → S
TIMING GENERATOR
H ADDRESS COUNTER
H TITLE AREA
V ADDRESS COUNTER
A14 GENERATOR
TITLE Y READ
Y RO
Y CO
Y BO
CHARACTER MIX
YR, YG, YB SYNTHESIS
EDGE SYNTHESIS
C RO
C CO
C BO
C BLK
CR, CG, CB SYNTHESIS
EDGE SYNTHESIS
INVERT
Y/C DELAY
TITLE Y+C READ
V TITLE AREA
A TITLE AREA SCROLL MODE GENERATOR
SCROLL MODE
FRAME DETECT
VD
HD
SYSTEM MODE COMMAND
COMMAND DECODE
H TIMING GENERATOR
PHASE DETECT
SYSTEM RESET
MASTER LOCK
BUSY
33
CS
34
SI
36
SCK
35
LCLR
64
OSC O
11
OSC I
9
PD UP
12
XP DN
13
CT161
PLL ADJ
D161
LPF
VCO


IC162
TITLE MEMORY
256k BIT STATIC MEMORY
CS
Q161
OE
WE
A0 – A5
10 – 5
A6 – A13
4, 3, 25, 24, 21, 23, 2, 26
A14
6
8
20–24, 27
28, 29, 51, 52, 55, 53, 30, 50
OE
WE
A0
A5
A6
A13
A14
H ADDRESS COUNTER
H TITLE AREA
V ADDRESS COUNTER
A14 GENERATOR
CG BK
CG IN
CG MK
DDS B
DDS W
W901
DDS B
DDS W
VIDEO(1) (VI-71)
TITLE Y READ
CHARACTER MIX
YR, YG, YB SYNTHESIS
Y RO
Y CO
Y BO
Y MATRIX
TY MIX
CN161
TY MIX
E DGE SYNTHESIS
TY BLK
TY BLK
TITLE Y+C READ
INVERT
Y/C DELAY
CR, CG, CB SYNTHESIS
C RO
C CO
C BO
TR
TG
TB
TR
TG
TB
CAMERA (VC-55P)
E DGE SYNTHESIS
C BLK
TC BLK
TC BLK
TITLE C READ
V TITLE AREA
SCROLL MODE
A TITLE AREA SCROLL MODE GENERATOR
FRAME DETECT
VD
HD
CN161
VD
HD
VD
HD
CAMERA (VC-55P)
H TIMING GENERATOR
PHASE DETECT
MASTER LOCK
OSC O
OSC I
PD UP
XP DN
CT161
PLL ADJ
D161
LPF
VCO
S RAM CS
SCK
DATA TO SLVE
TITLE CS
DATA TO MSTR
SYSCON

3-6. VIDEO(1) BLOCK DIAGRAM



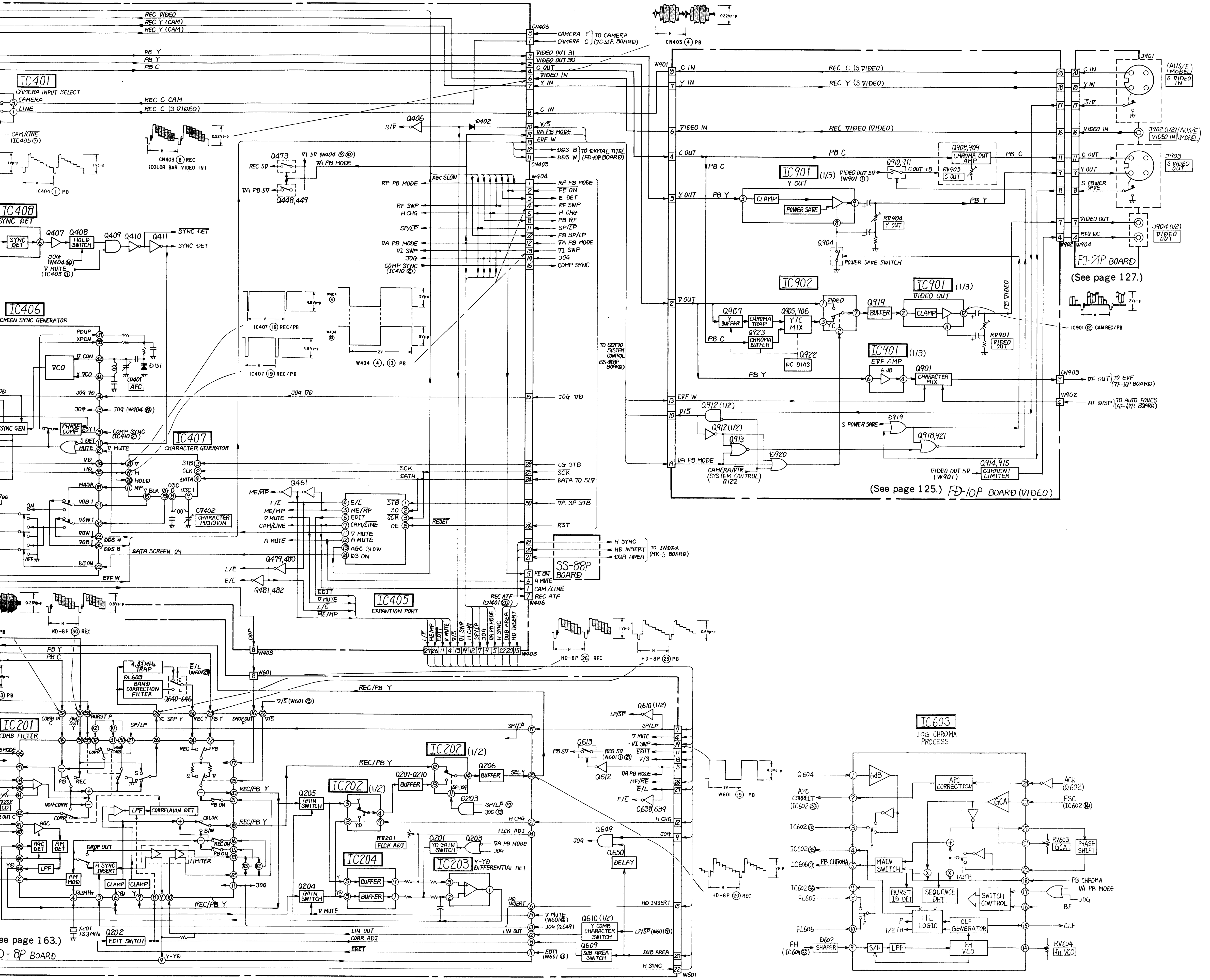
VI-71 BOARD
(See page 109.)
VI-72 BOARD (See page 117.)
HD-8P BOARD
(See page 163.)
TO VIDEO (2) (MR-20 BOARD)
TO SERVO (AT-7P BOARD)
TO AUDIO (AT-7P BOARD)
CN404
CN405
CN401
IC409 (1/3) PB SP/LP DET
IC410 Y PROCESS
IC409 (1/3) PRE-EMPHASIS
IC409 (1/3)
IC401 CAMERA INPUT SELECT
IC403 CHARACTER INSERT GRAY SCREEN
IC404 CHARACTER INSERT GRAY SCREEN
IC408 SYNC DET
IC406 DATA SCREEN SYNC GENERATOR
IC609 LIMETER AMP
IC601 CHROMA EMPHASIS
IC602 CHROMA PROCESS
IC603 JOG CHROMA PROCESS
IC604 AFC PULSE GENERATOR
IC606 REC/PB SWITCH, MUTING
IC605
IC201 COMB FILTER
REC VIDEO
REC Y (S VIDEO)
REC Y (CAM)
PB Y
PB C
REC C CAM
REC C (S VIDEO)
BUFFER
LPF
PEAKING EQ
E MODE EQ
L MODE EQ
L/E SWITCH
LPF SWITCH
PEAKING FREQUENCY SWITCH
PB EMPH
INVERT
L/E TIME CONSTANT SWITCH
SUB PREEMPHASIS
HPL
MAIN DE-EMPHASIS
PB LEVEL
CLAMP
AGC DET
AGC AMP
VIDEO OUT LEVEL
SYNC AGC
VIDEO OUT
DOC DET
LIMITER
FM DEMOD
SYNC SEP
CLAMP PULSE RF AGC
INPUT SELECT (3 STATE)
GRAY SCREEN SYNC ADD
DEMODE OUT LPF
BLACK/GRAY SWITCH
BLACK/GRAY LEVEL
WHITE LEVEL
WHITE SWITCH
JOG VD INSERT
MUTE
EE TRAP
SUBTRACT
FM MOD
CAR E
CAR L
DEV L
DEV E
HALF H SHIFT
AFM TRAP
CHROMA TRAP
TRAP & SWITCH
REC EQ
WHITE CLIP
DARK CLIP
MAIN PRE EMPHASIS
SUB PREEMPHASIS
KNEE & WHITE CLIP
L/M SWITCH
L/E TIME CONSTANT SWITCH
REC/PB SWITCH
REC Y LPF DELAY
LOOP GAIN
DROP OUT DET
SHARPNESS SWITCH
NOISE-CANCEL APEATURE COMPENSATION
NOISE-CANCEL CHARACTER SWITCH
APEATURE FREQUENCY SWITCH
EDIT SWITCH
HPF
INVERT AMP
LIMITER AMP
CHARACTER SWITCH
PBC BPF
PB C BUFFER
C/AFM/ATF MIX
MP/ME GAIN SWITCH
REC C EQ & AFM TRAP
REC C BUFFER
CHROMA EMPHASIS TRAP
ATT
CARRIER BALANCE
CARRIER INVERT
CARRIER CONV
375FH VCO
AFC ID
AFC
CHROMA CONV
BURST EMPH DE EMPH
APC DET
APC DET SW & AMP
SYNC DET
4.43MHz X'TAL OSC
90° SHIFT
FSC
ACK
ACC AMP
DC AMP & CH HOLD
PEAK HOLD
CHROMA AMP
BURST ID FF
SYNTHESIS GATE
HALF H KILLER
SWP×1/2H PULSE GENER
V SEP
DELAY PULSE GENERATOR
VCO
PHASE COMP
SYNC GEN
4.43MHz TRAP
BAND CORRECTION FILTER
1H DELAY
AGC DET
AM DET
DROP OUT
H SYNC INSERT
AM MOD
CORRELATION DET
EDIT SWITCH
DATA SCREEN ON
-47-
-48-


IC401
CAMERA INPUT SELECT
IC408
SYNC DET
IC406
SCREEN SYNC GENERATOR
IC407
CHARACTER GENERATOR
IC405
EXPANTION PORT
SS-88P BOARD
IC201
COMB FILTER
IC202 (1/2)
IC203
Y-YD DIFFERENTIAL DET
IC204
HD-8P BOARD
IC901 (1/3)
Y OUT
IC902
IC901 (1/3)
VIDEO OUT
IC901 (1/3)
EVF AMP
FD-10P BOARD (VIDEO)
PJ-21P BOARD
IC603
JOG CHROMA PROCESS
CN406
CN403
CN404
CN903
W401
W402
W403
W404
W406
W601
W901
W902
W904
J901
J902 (1/2)
J903
J904 (1/2)
TO CAMERA (TC-55P BOARD)
TO DIGITAL TITLE (FD-10P BOARD)
TO SERVO SYSTEM CONTROL (SS-88P BOARD)
TO INDEX (MK-5 BOARD)
TO EVF (VF-31P BOARD)
TO AUTO FOUCS (AF-49P BOARD)
REC VIDEO
REC Y (CAM)
PB Y
PB C
REC C (S VIDEO)
REC Y (S VIDEO)
REC VIDEO (VIDEO)
REC/PB Y
CLAMP
POWER SAVE
BUFFER
CHROMA TRAP
Y/C MIX
CHROMA BUFFER
DC BIAS
CHARACTER MIX
CURRENT LIMITER
GAIN SWITCH
FLCK ADJ
YD GAIN SWITCH
DELAY
EDIT SWITCH
APC CORRECTION
GCA
MAIN SWITCH
BURST ID DET
SEQUENCE DET
SWITCH CONTROL
IIL LOGIC
CLF GENERATOR
FH VCO
S/H
LPF
SHAPER
PHASE SHIFT

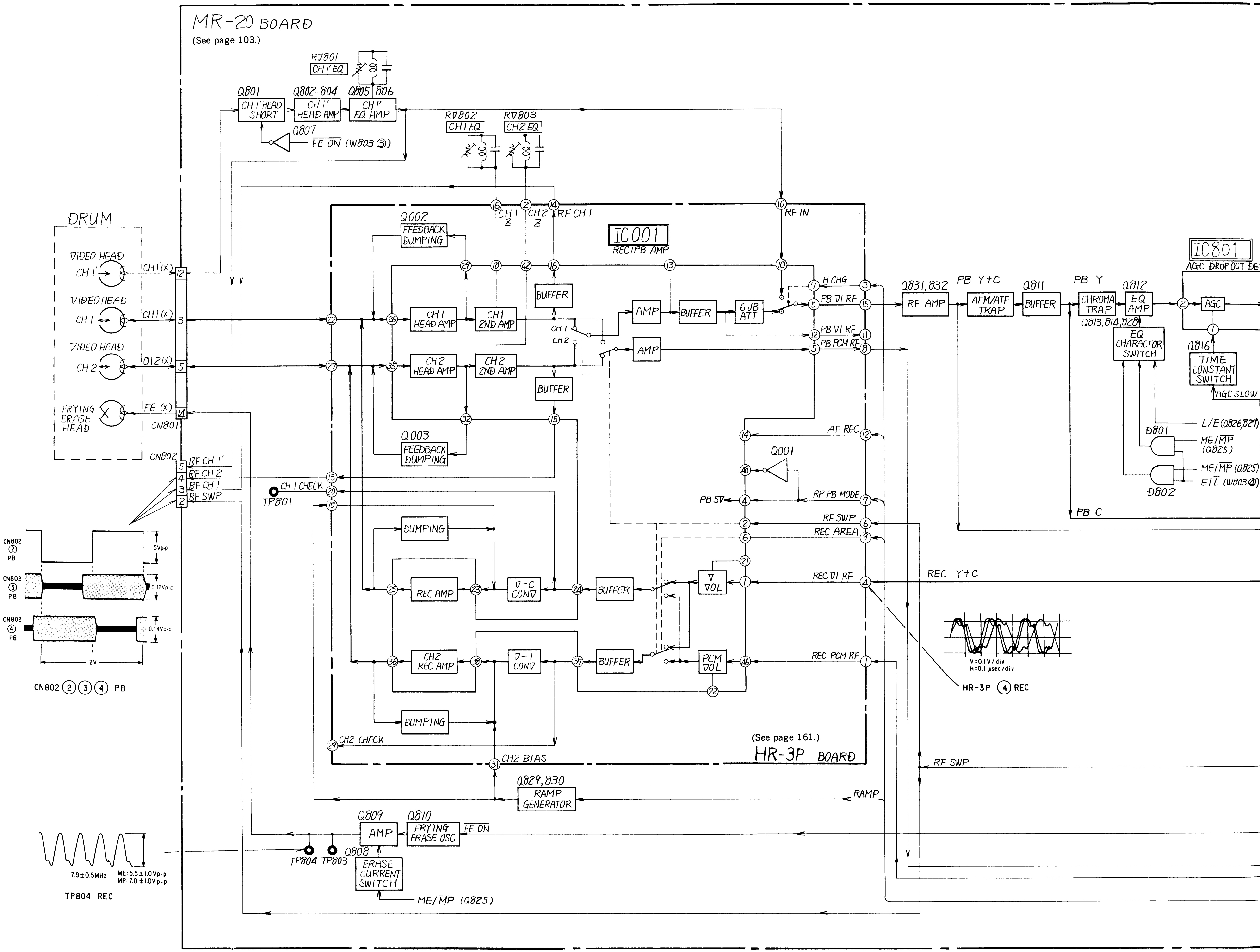
(See page 125.)

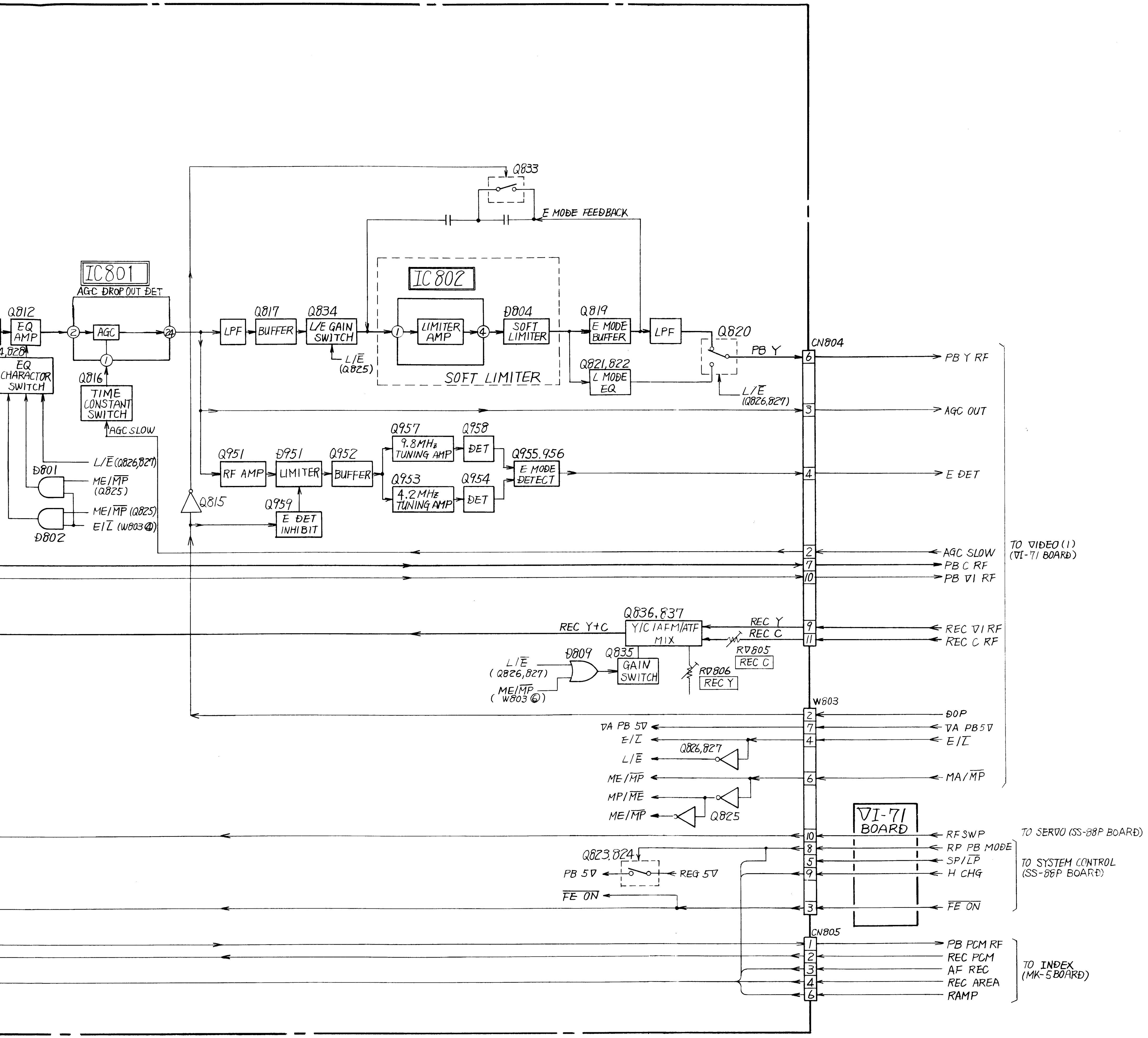
(See page 127.)

(See page 163.)

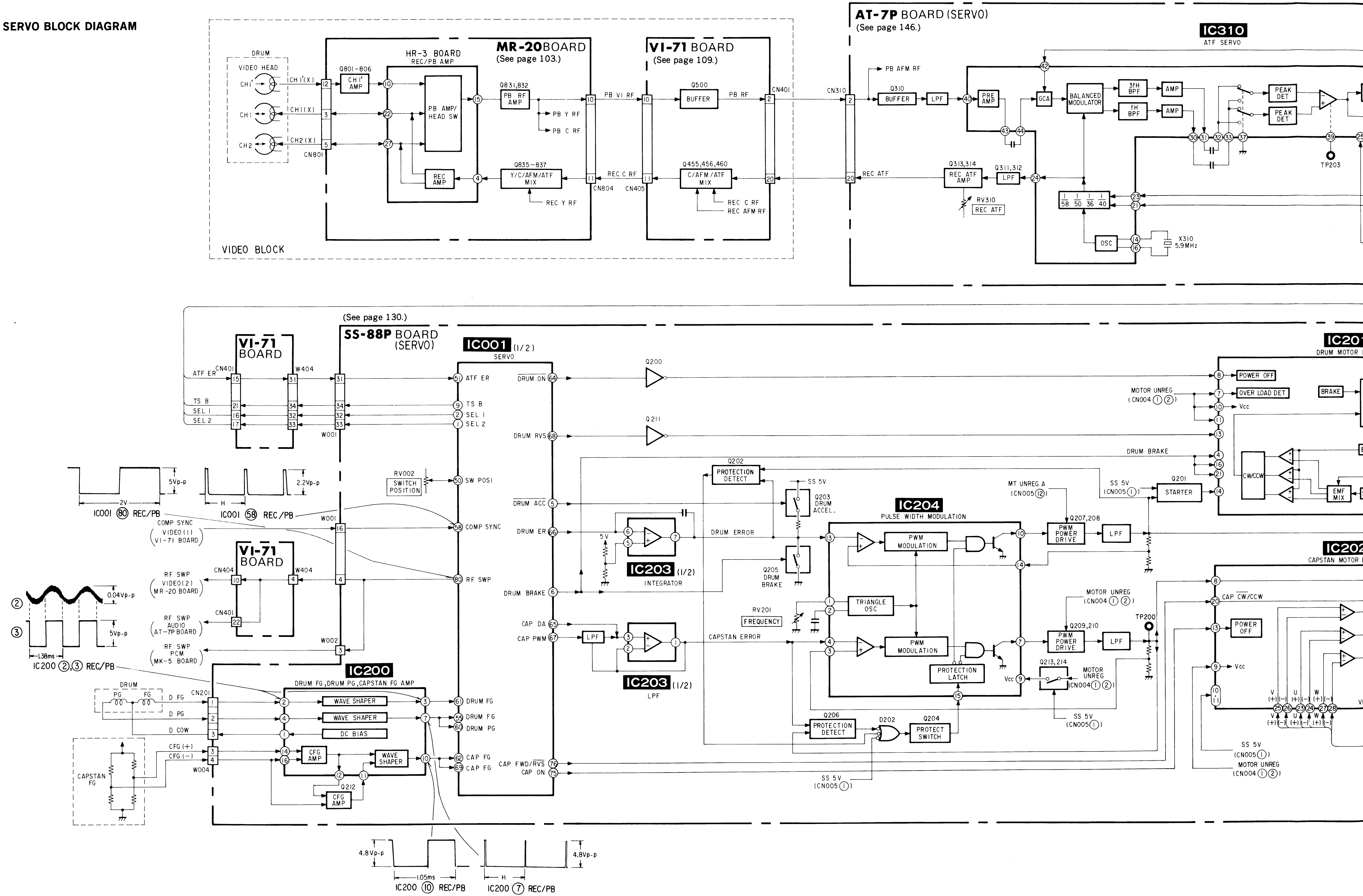

REC VIDEO
REC Y (CAM)
CN406
CAMERA Y
CAMERA C
TO CAMERA (TC-55P BOARD)
VIDEO OUT 31
VIDEO OUT 30
C OUT
VIDEO IN
Y IN
C IN
IC401
CAMERA INPUT SELECT
REC C CAM
REC C (S VIDEO)
CN403 ⑥ REC (COLOR BAR VIDEO IN)
CN403 ④ PB
IC408
SYNC DET
Q407 Q408
HOLD SWITCH
Q409 Q410 Q411
SYNC DET
IC406
SCREEN SYNC GENERATOR
VCO
AFC
D151
CV401
PHASE COMP
IC407
CHARACTER GENERATOR
CV402
CHARACTER POSITION
Q406
D402
TO DIGITAL TITLE (FD-10P BOARD)
Q473
Q448,449
W404
RP PB MODE
FE ON
E DET
RF SWP
H CHG
PB RF
SP/LP
VA PB MODE
VI SWP
JOG
COMP SYNC
AGC SLOW
IC407 ⑱ REC/PB
IC407 ⑲ REC/PB
W404 ④, ⑬ PB
TO SERVO SYSTEM CONTROL (SS-88P BOARD)
JOG VD
CG STB
SCK
DATA TO SLV
VA SP STB
RST
Q461
IC405
EXPANTION PORT
RESET
SS-88P BOARD
H SYNC
HD INSERT
DUB AREA
TO INDEX (MK-5 BOARD)
Q479,480
Q481,482
W403
HD-8P ㉚ REC
HD-8P ㉖ REC
HD-8P ㉓ PB
W601
REC/PB Y
4.43MHz TRAP
DL603
BAND CORRECTION FILTER
Q640-646
IC201
COMB FILTER
IC202 (1/2)
Q207-Q210
BUFFER
Q206
Q205
GAIN SWITCH
Q203
IC204
IC203
Y-YD DIFFERENTIAL DET
Q201
YD GAIN SWITCH
RV201
FLCK ADJ
Q204
Q202
EDIT SWITCH
X201 13.3MHz
(See page 163.)
D-8P BOARD
Q610 (1/2)
Q613
Q612
Q638,639
Q649
Q650
DELAY
Q609
DUB AREA SWITCH
Y COMB CHARACTER SWITCH
W601 ⑲ PB
HD-8P ⑳ REC
W901
REC C (S VIDEO)
REC Y (S VIDEO)
REC VIDEO (VIDEO)
PB C
Q908,909
CHROMA OUT AMP
RV903
Q910,911
IC901 (1/3)
Y OUT
CLAMP
POWER SAVE
RV904
Q904
POWER SAVE SWITCH
IC902
Q907
Y BUFFER
CHROMA TRAP
Q905,906
Y/C MIX
Q923
CHROMA BUFFER
Q922
DC BIAS
Q919
BUFFER
IC901 (1/3)
VIDEO OUT
RV901
IC901 (1/3)
EVF AMP
Q901
CHARACTER MIX
CN903
VF OUT TO EVF (VF-19P BOARD)
W902
AF DISP TO AUTO FOUCS (AF-49P BOARD)
Q912 (1/2)
Q913
D920
D919
Q918,921
Q914,915
CURRENT LIMITER
CAMERA/VTR (SYSTEM CONTROL) Q122
(See page 125.)
FD-10P BOARD (VIDEO)
IC901 ⑫ CAM REC/PB
J901 (AUS/E MODEL) S VIDEO IN
J902 (1/2) (AUS/E MODEL) VIDEO IN
J903 S VIDEO OUT
J904 (1/2) VIDEO OUT
W904
PJ-21P BOARD
(See page 127.)
IC603
JOG CHROMA PROCESS
Q604
APC CORRECT (IC602 ㉝)
IC602
FL605
FL606
FH (IC604 ㉝)
D602 SHAPER
6dB
APC CORRECTION
GCA
ACK (Q602)
FSC (IC602 ㉞)
RV603 GCA
PHASE SHIFT
MAIN SWITCH
BURST ID DET
SEQUENCE DET
SWITCH CONTROL
IIL LOGIC
CLF GENERATOR
S/H
LPF
FH VCO
PB CHROMA
VA PB MODE
JOG
BF
CLF
RV604 fH VCO

3-7. VIDEO(2) BLOCK DIAGRAM

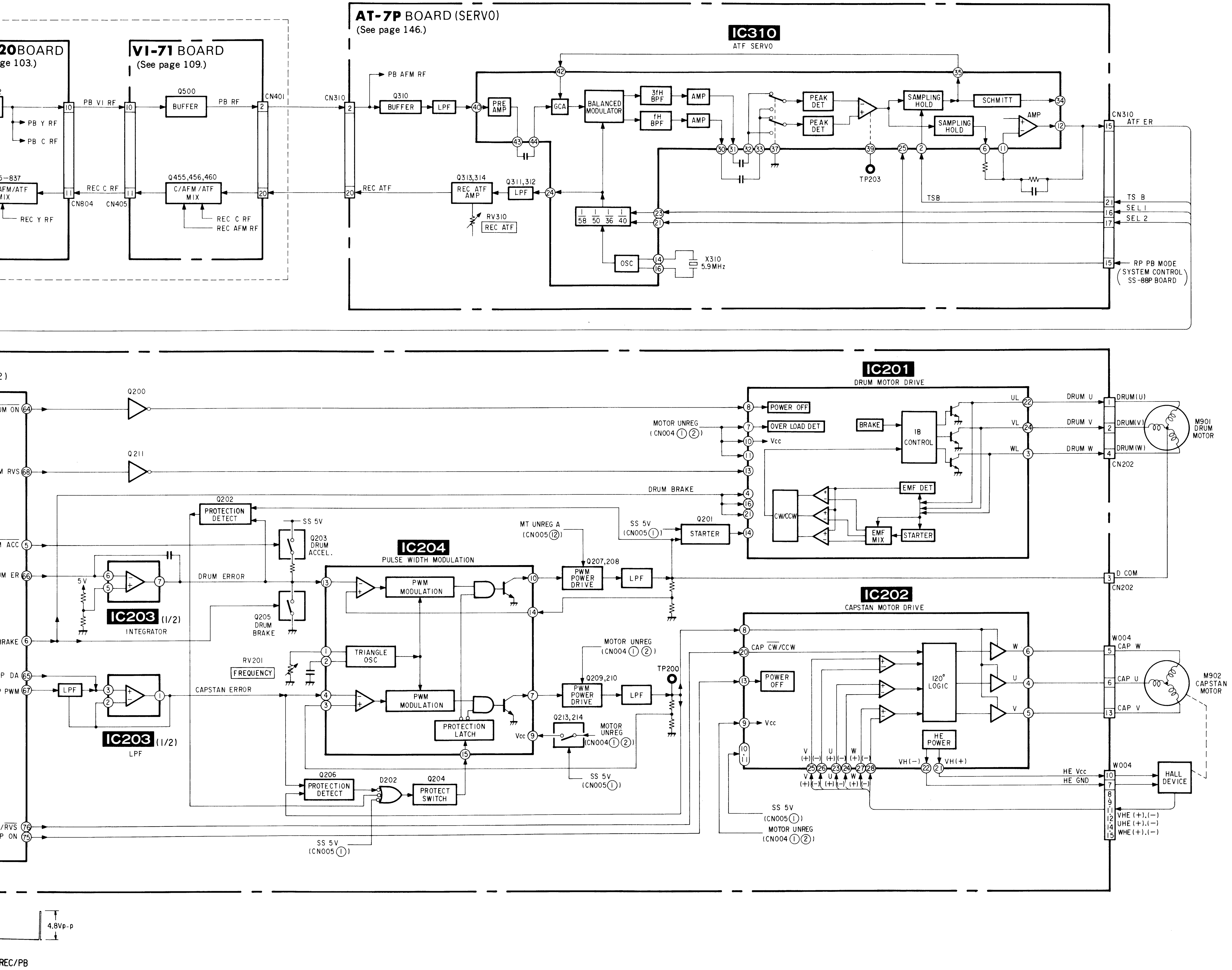

MR-20 BOARD
(See page 103.)
RV801
CH1'EQ
Q801
CH1'HEAD SHORT
Q802-804
CH1' HEAD AMP
Q805, 806
CH1' EQ AMP
Q807
FE ON (W803 ③)
RV802
CH1 EQ
RV803
CH2 EQ
DRUM
VIDEO HEAD
CH1'
CH1
CH2
FRYING ERASE HEAD
CH1'(X)
CH1(X)
CH2(X)
FE (X)
CN801
CN802
RF CH1'
RF CH2
RF CH1
RF SWP
CH1 Z
CH2 Z
RF CH1
RF IN
IC001
REC/PB AMP
Q002
FEEDBACK DUMPING
Q003
FEEDBACK DUMPING
CH1 HEAD AMP
CH1 2ND AMP
CH2 HEAD AMP
CH2 2ND AMP
BUFFER
AMP
6dB ATT
H CHG
PB VI RF
PB PCM RF
AF REC
Q001
RP PB MODE
PB 5V
RF SWP
REC AREA
REC VI RF
REC PCM RF
CH1 CHECK
TP801
DUMPING
REC AMP
V-C CONV
V VOL
CH2 REC AMP
V-I CONV
PCM VOL
CH2 CHECK
CH2 BIAS
(See page 161.)
HR-3P BOARD
Q829, 830
RAMP GENERATOR
RAMP
Q809
AMP
Q810
FRYING ERASE OSC
FE ON
TP804
TP803
Q808
ERASE CURRENT SWITCH
ME/MP (Q825)
Q831, 832
RF AMP
PB Y+C
AFM/ATF TRAP
Q811
BUFFER
PB Y
CHROMA TRAP
Q813, 814, 828
Q812
EQ AMP
EQ CHARACTOR SWITCH
IC801
AGC DROP OUT DE
AGC
Q816
TIME CONSTANT SWITCH
AGC SLOW
L/E (Q826, 827)
ME/MP (Q825)
E/L (W803 ④)
D801
D802
PB C
REC Y+C
RF SWP
CN802 ② PB
5Vp-p
CN802 ③ PB
0.12Vp-p
CN802 ④ PB
0.14Vp-p
2V
CN802 ②③④ PB
7.9±0.5MHz
ME: 5.5±1.0Vp-p
MP: 7.0±1.0Vp-p
TP804 REC
V=0.1V/div
H=0.1µsec/div
HR-3P ④ REC


IC801
AGC DROP OUT DET
Q812
EQ AMP
AGC
Q816
TIME CONSTANT SWITCH
AGC SLOW
EQ CHARACTOR SWITCH
L/E (Q826,827)
D801
ME/MP (Q825)
ME/MP (Q825)
E/I (W803④)
D802
Q815
LPF
Q817
BUFFER
Q834
L/E GAIN SWITCH
L/E (Q825)
Q833
E MODE FEEDBACK
IC802
LIMITER AMP
D804
SOFT LIMITER
SOFT LIMITER
Q819
E MODE BUFFER
LPF
Q820
PB Y
Q821,822
L MODE EQ
L/E (Q826,827)
CN804
PB Y RF
AGC OUT
Q951
RF AMP
D951
LIMITER
Q952
BUFFER
Q957
9.8MHz TUNING AMP
Q958
DET
Q953
4.2MHz TUNING AMP
Q954
DET
Q955,956
E MODE DETECT
Q959
E DET INHIBIT
E DET
AGC SLOW
PB C RF
PB VI RF
TO VIDEO (1) (VI-71 BOARD)
Q836,837
Y/C/AFM/ATF MIX
REC Y+C
REC Y
REC C
RV805
REC C
RV806
REC Y
REC VI RF
REC C RF
D809
Q835
GAIN SWITCH
L/E (Q826,827)
ME/MP (W803⑥)
W803
DOP
VA PB 5V
E/I
L/E
Q826,827
ME/MP
MP/ME
ME/MP
Q825
MA/MP
VI-71 BOARD
RF SWP
RP PB MODE
SP/LP
H CHG
FE ON
TO SERVO (SS-88P BOARD)
TO SYSTEM CONTROL (SS-88P BOARD)
Q823,824
PB 5V
REG 5V
FE ON
CN805
PB PCM RF
REC PCM
AF REC
REC AREA
RAMP
TO INDEX (MK-5 BOARD)

3-8. SERVO BLOCK DIAGRAM



VIDEO BLOCK
DRUM
VIDEO HEAD
CH1'
CH1
CH2
CH1'(X)
CH1(X)
CH2(X)
CN801
HR-3 BOARD
REC/PB AMP
Q801-806
CH1' AMP
PB AMP/ HEAD SW
REC AMP
MR-20 BOARD
(See page 103.)
Q831,832
PB RF AMP
PB Y RF
PB C RF
Q835-837
Y/C/AFM/ATF MIX
REC Y RF
PB VI RF
REC C RF
CN804
CN405
VI-71 BOARD
(See page 109.)
Q500
BUFFER
PB RF
CN401
Q455,456,460
C/AFM/ATF MIX
REC C RF
REC AFM RF
AT-7P BOARD (SERVO)
(See page 146.)
CN310
PB AFM RF
Q310
BUFFER
LPF
PRE AMP
GCA
BALANCED MODULATOR
3fH BPF
fH BPF
AMP
PEAK DET
IC310
ATF SERVO
TP203
REC ATF
Q313,314
REC ATF AMP
Q311,312
LPF
RV310
REC ATF
1/58 1/50 1/36 1/40
OSC
X310 5.9MHz
(See page 130.)
SS-88P BOARD (SERVO)
VI-71 BOARD
ATF ER
TS B
SEL 1
SEL 2
CN401
W404
W001
IC001 (1/2)
SERVO
ATF ER
TS B
SEL 1
SEL 2
DRUM ON
DRUM RVS
Q200
Q211
RV002
SWITCH POSITION
SW POSI
COMP SYNC
RF SWP
DRUM ACC
DRUM ER
DRUM BRAKE
CAP DA
CAP PWM
DRUM FG
DRUM PG
CAP FG
CAP FWD/RVS
CAP ON
5Vp-p
2V
IC001 (80) REC/PB
2.2Vp-p
H
IC001 (58) REC/PB
COMP SYNC
VIDEO (1)
VI-71 BOARD
RF SWP
VIDEO (2)
MR-20 BOARD
RF SWP
AUDIO
AT-7P BOARD
RF SWP
PCM
MK-5 BOARD
CN404
W002
0.04Vp-p
5Vp-p
1.38ms
IC200 ②,③ REC/PB
IC200
DRUM FG, DRUM PG, CAPSTAN FG AMP
DRUM
PG
FG
D FG
D PG
D COW
CN201
CFG (+)
CFG (−)
W004
CAPSTAN FG
WAVE SHAPER
DC BIAS
CFG AMP
Q212
4.8Vp-p
1.05ms
IC200 ⑩ REC/PB
IC200 ⑦ REC/PB
Q202
PROTECTION DETECT
SS 5V
Q203
DRUM ACCEL.
Q205
DRUM BRAKE
5V
IC203 (1/2)
INTEGRATOR
DRUM ERROR
IC203 (1/2)
LPF
CAPSTAN ERROR
RV201
FREQUENCY
IC204
PULSE WIDTH MODULATION
PWM MODULATION
TRIANGLE OSC
PROTECTION LATCH
Vcc
Q206
PROTECTION DETECT
D202
Q204
PROTECT SWITCH
SS 5V
(CN005 ①)
Q207,208
PWM POWER DRIVE
LPF
MT UNREG A
(CN005 ⑫)
MOTOR UNREG
(CN004 ① ②)
Q209,210
TP200
Q213,214
MOTOR UNREG
(CN004 ① ②)
SS 5V
(CN005 ①)
Q201
STARTER
DRUM BRAKE
IC201
DRUM MOTOR
POWER OFF
OVER LOAD DET
BRAKE
Vcc
CW/CCW
EMF MIX
IC202
CAPSTAN MOTOR
CAP CW/CCW
POWER OFF
Vcc
V (+)(−)
U (+)(−)
W (+)(−)
SS 5V
(CN005 ①)
MOTOR UNREG
(CN004 ① ②)


20BOARD
ge 103.)
PB Y RF
PB C RF
5–837
AFM/ATF
MIX
REC Y RF
VI-71 BOARD
(See page 109.)
PB VI RF
Q500
BUFFER
PB RF
CN401
CN804
CN405
REC C RF
Q455,456,460
C/AFM/ATF
MIX
REC C RF
REC AFM RF
AT-7P BOARD (SERVO)
(See page 146.)
IC310
ATF SERVO
CN310
PB AFM RF
Q310
BUFFER
LPF
PRE AMP
GCA
BALANCED MODULATOR
3fH BPF
fH BPF
AMP
AMP
PEAK DET
PEAK DET
SAMPLING HOLD
SAMPLING HOLD
SCHMITT
AMP
TP203
REC ATF
Q313,314
REC ATF AMP
Q311,312
LPF
RV310
REC ATF
58 50 36 40
OSC
X310
5.9MHz
CN310
ATF ER
TS B
SEL 1
SEL 2
TSB
RP PB MODE
(SYSTEM CONTROL SS-88P BOARD)
IC201
DRUM MOTOR DRIVE
Q200
UM ON
Q211
M RVS
MOTOR UNREG
(CN004 ① ②)
POWER OFF
OVER LOAD DET
Vcc
BRAKE
IB CONTROL
UL
VL
WL
DRUM U
DRUM V
DRUM W
DRUM(U)
DRUM(V)
DRUM(W)
CN202
M901
DRUM
MOTOR
DRUM BRAKE
EMF DET
CW/CCW
EMF MIX
STARTER
Q202
PROTECTION DETECT
SS 5V
Q203
DRUM
ACCEL.
SS 5V
(CN005 ①)
Q201
STARTER
MT UNREG A
(CN005 ⑫)
IC204
PULSE WIDTH MODULATION
M ACC
M ER
DRUM ERROR
5V
IC203 (1/2)
INTEGRATOR
PWM MODULATION
Q207,208
PWM POWER DRIVE
LPF
D COM
CN202
Q205
DRUM
BRAKE
RAKE
IC202
CAPSTAN MOTOR DRIVE
TRIANGLE OSC
RV201
FREQUENCY
MOTOR UNREG
(CN004 ① ②)
TP200
CAP CW/CCW
POWER OFF
120° LOGIC
W004
CAP W
CAP U
CAP V
M902
CAPSTAN
MOTOR
P DA
P PWM
LPF
CAPSTAN ERROR
PWM MODULATION
Q209,210
PWM POWER DRIVE
LPF
IC203 (1/2)
LPF
PROTECTION LATCH
Q213,214
MOTOR UNREG
(CN004 ① ②)
Vcc
HE POWER
V (+)(−)
U (+)(−)
W (+)(−)
VH(−)
VH(+)
W004
HE Vcc
HE GND
HALL DEVICE
Q206
PROTECTION DETECT
D202
Q204
PROTECT SWITCH
SS 5V
(CN005 ①)
SS 5V
(CN005 ①)
SS 5V
(CN005 ①)
MOTOR UNREG
(CN004 ① ②)
VHE (+),(−)
UHE (+),(−)
WHE (+),(−)
/RVS
P ON
4.8Vp-p
REC/PB

3-9. Servo/System Control IC Terminal Function

• SS-88P BOARD IC001 (CXP80116)

Pin No.	Port name	I/O	ACT.	Function
1	SEL 2	O	H	Controls the frequency of ATF REF PILOT Signal.
2	SEL 1	O	H	
3	(FERA)	O	H	Not used.
4	VI SWP	O	H	25Hz Periode duty 50% pulse during play back mode.
5	$\overline{\text{DRUM ACCEL}}$	O	L	Drum acceleraing signal during "SLOW" mode.
6	DRUM BRAKE	O	H	Drum reducing signal during "SLOW" mode.
7	CLOG CONT	O	H	Time constant changing signal for CLOG detection.
8	JOG	O	H	Video circuit normal/variable-speed playback switching signal.
9	TSB	O	H	ATF lock sampling hold signal. "LOW" during sampling. "High" during hold.
10	H CHG	O	H	
11	SYSTEM SYNC	O	H	INT-V signal for drum servo. Used as a clock during step start with drum driver IC (CXA1206).
12	SP/$\overline{\text{LP}}$	O	H	SP/LP discrimination signal output, "High" : SP mode. "LOW" : LP mode.
13	———			———
14	VA PB MODE	O	H	Video audio circuit REC/PB switching signal. "High" during play back.
15	$\overline{\text{M IN 3}}$	I	L	Key matrix input from mechanical function switch.
16	$\overline{\text{M IN 2}}$	I	L	
17	$\overline{\text{M IN 1}}$	I	L	
18	$\overline{\text{M IN 0}}$	I	L	
19	———			
20	LM UNLOAD	O	H	Loading motor control signal.
21	LM LOAD	O	H	Loading motor control signal.
22	———			———
23	———			———
24	M OUT 2	O	H	Key matrix out put signal.
25	$\overline{\text{M OUT 1}}$	O	L	
26	$\overline{\text{M OUT 2}}$	O	L	
27	TOP/END LED	O	H	Tape top/end detection LED ON/OFF signal.
28	$\overline{\text{REEL LED}}$	O	L	Reel rotalion detection LED control signal.
29	———			———
30	———			———
31	MP	I	—	Fixed at "LOW".
32	$\overline{\text{RST}}$	I	L	Reset input from mode control microcomputer.
33	GND	—	—	———
34	XTAL	I	—	16.0MHz Crystal oscillation connecting pin.
35	EXTAL	I	—	

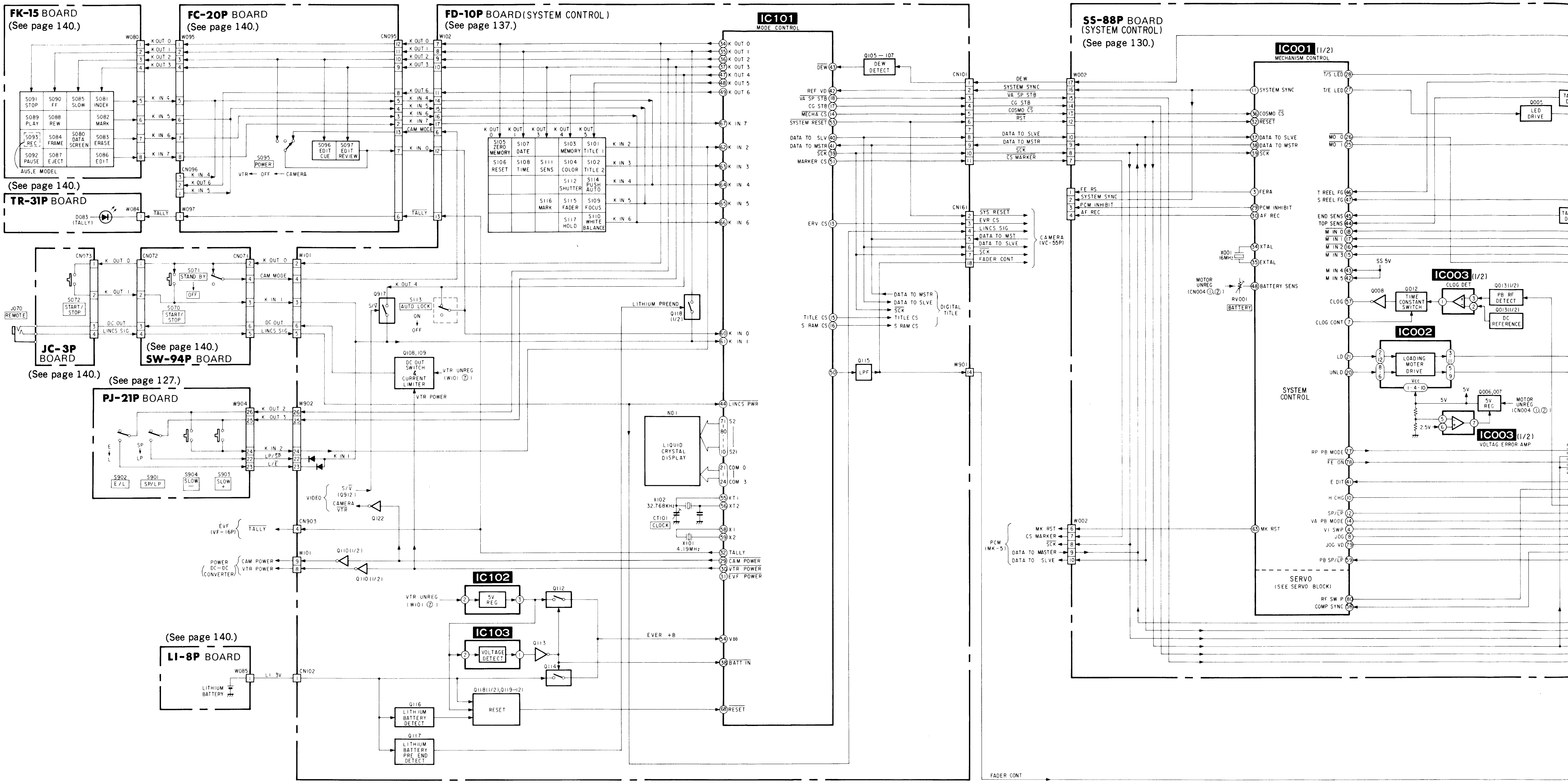
Pin No.	Port name	I/O	ACT.	Function
36	$\overline{\text{MECH CS}}$	I	L	Chip select signal from mode control microcomputer.
37	DATA TO SLV	I	H	Communication data from mode controller to system/servo controller.
38	DATA TO MST	O	H	Communication data from system/servo controller to mode controller.
39	$\overline{\text{CLK}}$	I	L	Communication clock from mode control computer.
40	———	—	—	
41	E DET	I	H	Hi-8/Normal automatically detection signal input.
42	($\overline{\text{M IN 5}}$)	I	L	Not used, fixed at "LOW".
43	($\overline{\text{M IN 4}}$)	I	L	
44	TOP SENS	I	H	Tape top detection signal.
45	END SENS	I	H	Tape end detection signal.
46	T REEL FG	I	H	T-rell rotation detection signal input.
47	S REEL FG	I	H	S-reel rotation detection signal input.
48	BATT SENS	I		Battery level detection signal input.
49	———	—	—	———
50	SW POSI ADJ	I		Switching position adjustment input.
51	ATF ERROR	I		ATF error (ATF LOCK error) input.
52	AV_{ss}			AD converter GND pin.
53	AV_{ref}	I		AD converter reference voltage input pin.
54	AV_{dd}			AD converter positive power supply pin.
55	DRUM PG	I		Drum PG input. (50Hz ▁⎍⎍▁▁▁▁⎍⎍▁).
56	———	—	—	
57	CLOG	I	H	CLOG detection signal (PB RF signal) input.
58	COMP SYNC	I		Video compsite sync signal input.
59	PB SP/$\overline{\text{LP}}$	I	H	SP/LP discrimination signal input when playback.
60	DRUM PG	I	H	Drum PG input.
61	DRUM FG	I	H	Drum FG input. (600Hz, duty 50%).
62	CAP FG	I	H	CAPSTAN FG input (SP : 1325Hz, duty50%).
63	$\overline{\text{MK RST}}$	O	L	Index operation control signal.
64	$\overline{\text{DRUM ON}}$	O	L	Drum driver ON signal.
65	CAP D/A	O	H	CAPSTAN servo control signal.
66	DRUM D/A	O	H	D/A gate pulse output pin to output DRUM error.
67	CAP PWM	O	H	PWM output pin servo exclusive output pin to output cap error.
68	DRUM RVS	O	H	Drum rotalion direction control signal. RVS by "High".
69	CAP FG	I	H	External event input pin to CAP FG input exclusive counter for tape counter drive.
70	———	—	—	———
71	NM 1		L	Non-maskable interrupt pin, normally "High".
72	V_{dd}			Positive power supply pin.

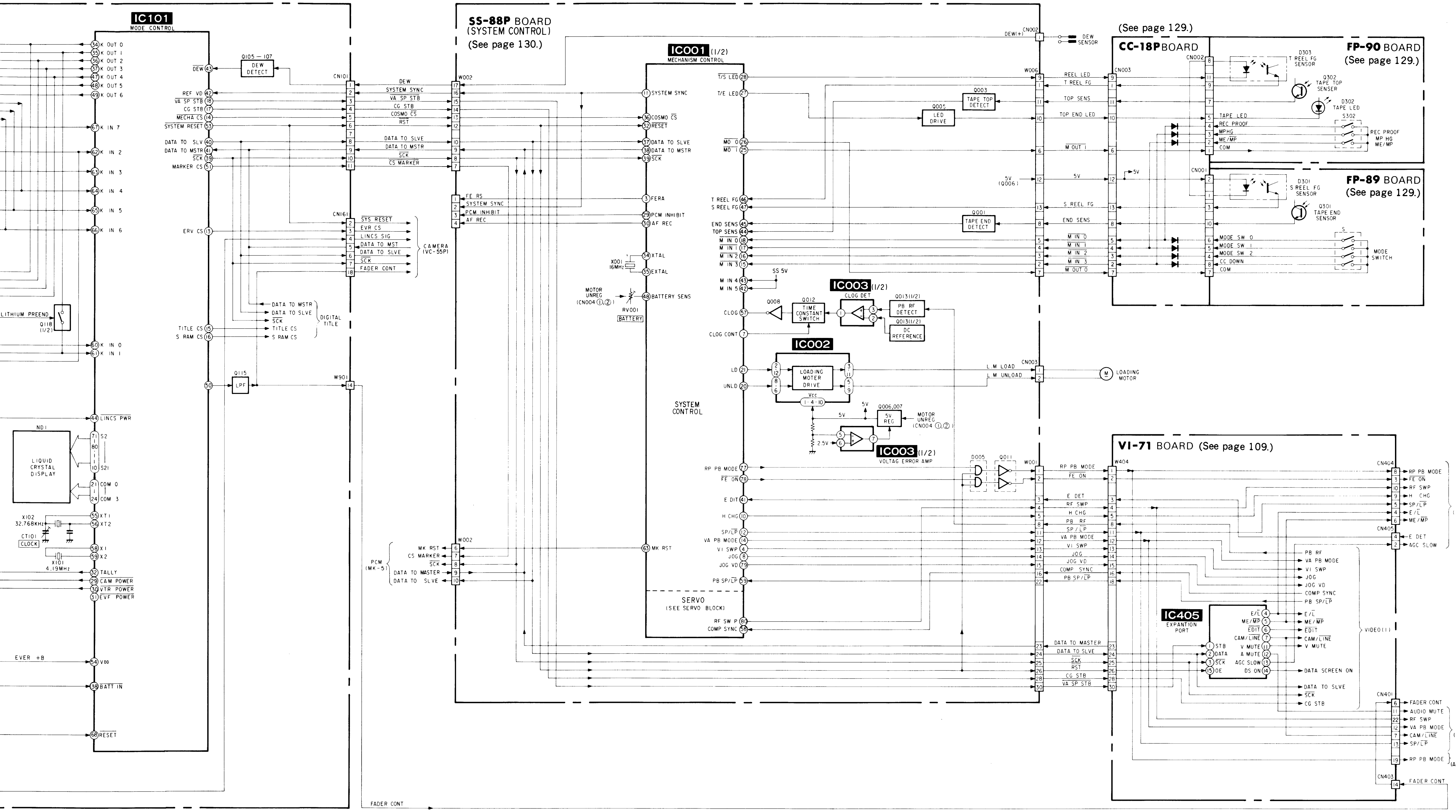
Pin No.
73
74
75
76
77
78
79
80

Pin No.	Port name	I/O	ACT.	Function
36	$\overline{\text{MECH CS}}$	I	L	Chip select signal from mode control microcomputer.
37	DATA TO SLV	I	H	Communication data from mode controller to system/servo controller.
38	DATA TO MST	O	H	Communication data from system/servo controller to mode controller.
39	$\overline{\text{CLK}}$	I	L	Communication clock from mode control computer.
40	———	—	—	
41	E DET	I	H	Hi-8/Normal automatically detection signal input.
42	($\overline{\text{M IN 5}}$)	I	L	} Not used, fixed at "LOW".
43	($\overline{\text{M IN 4}}$)	I	L	
44	TOP SENS	I	H	Tape top detection signal.
45	END SENS	I	H	Tape end detection signal.
46	T REEL FG	I	H	T-rell rotation detection signal input.
47	S REEL FG	I	H	S-reel rotation detection signal input.
48	BATT SENS	I		Battery level detection signal input.
49	———	—	—	———————
50	SW POSI ADJ	I		Switching position adjustment input.
51	ATF ERROR	I		ATF error (ATF LOCK error) input.
52	AV_{ss}			AD converter GND pin.
53	AV_{ref}	I		AD converter reference voltage input pin.
54	AV_{dd}			AD converter positive power supply pin.
55	DRUM PG	I		Drum PG input. (50Hz _⊓⊓____⊓⊓_).
56	———	—	—	
57	CLOG	I	H	CLOG detection signal (PB RF signal) input.
58	COMP SYNC	I		Video compsite sync signal input.
59	PB SP/$\overline{\text{LP}}$	I	H	SP/LP discrimination signal input when playback.
60	DRUM PG	I	H	Drum PG input.
61	DRUM FG	I	H	Drum FG input. (600Hz, duty 50%).
62	CAP FG	I	H	CAPSTAN FG input (SP : 1325Hz, duty50%).
63	$\overline{\text{MK RST}}$	O	L	Index operation control signal.
64	$\overline{\text{DRUM ON}}$	O	L	Drum driver ON signal.
65	CAP D/A	O	H	CAPSTAN servo control signal.
66	DRUM D/A	O	H	D/A gate pulse output pin to output DRUM error.
67	CAP PWM	O	H	PWM output pin servo exclusive output pin to output cap error.
68	DRUM RVS	O	H	Drum rotalion direction control signal. RVS by "High".
69	CAP FG	I	H	External event input pin to CAP FG input exclusive counter for tape counter drive.
70	———	—	—	———————
71	NM 1		L	Non-maskable interrupt pin, normally "High".
72	V_{dd}			Positive power supply pin.

Pin No.	Port name	I/O	ACT.	Function
73	GND			GND pin.
74	———	—	—	———————
75	CAP ON	O	H	Capstan driver control signal.
76	CAP FWD	O	H	Capstan motor rotation direction control signal.
77	$\overline{\text{RP PB MODE}}$	O	L	Switching signals for REC/PB amplifier and REC/PB mode of ATF IC.
78	FE ON (FERS)	O	H	Flying erase oscillation ON/OFF signal.
79	JOG V_d	O	H	Insert to VIDEO signal when variable-speed playback.
80	RF SWP	O	H	RF SWP output pin.

3-10. SYSTEM CONTROL BLOCK DIAGRAM


FK-15 BOARD
(See page 140.)
S091 STOP
S090 FF
S085 SLOW
S081 INDEX
S089 PLAY
S088 REW
S082 MARK
S093 REC
S084 FRAME
S080 DATA SCREEN
S083 ERASE
S092 PAUSE
S087 EJECT
S086 EDIT
AUS,E MODEL
(See page 140.)
TR-31P BOARD
D083 (TALLY)
FC-20P BOARD
(See page 140.)
S095 POWER
VTR ← OFF → CAMERA
S096 EDIT CUE
S097 EDIT REVIEW
FD-10P BOARD(SYSTEM CONTROL)
(See page 137.)
IC101
MODE CONTROL
S105 ZERO MEMORY
S107 DATE
S103 MEMORY
S101 TITLE 1
S106 RESET
S108 TIME
S111 SENS
S104 COLOR
S102 TITLE 2
S112 SHUTTER
S114 PUSH AUTO
S116 MARK
S115 FADER
S109 FOCUS
S117 HOLD
S110 WHITE BALANCE
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
K OUT 6
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
K IN 7
CAM MODE
TALLY
Q105 — 107 DEW DETECT
DEW
REF VD
VA SP STB
CG STB
MECHA CS
SYSTEM RESET
DATA TO SLV
DATA TO MSTR
SCK
MARKER CS
ERV CS
TITLE CS
S RAM CS
SYS RESET
EVR CS
LINCS SIG
DATA TO MST
DATA TO SLVE
FADER CONT
CAMERA (VC-55P)
DATA TO MSTR
DATA TO SLVE
DIGITAL TITLE
Q115 LPF
JC-3P BOARD
(See page 140.)
J070 REMOTE
S072 START/STOP
DC OUT
LINCS SIG
SW-94P BOARD
(See page 140.)
S071 STAND BY
OFF
S070 START/STOP
Q917
S113 AUTO LOCK
ON
OFF
Q108, 109 DC OUT SWITCH & CURRENT LIMITER
VTR UNREG (W101 ⑦)
VTR POWER
LITHIUM PREEND
Q118 (1/2)
PJ-21P BOARD
(See page 127.)
S902 E/L
S901 SP/LP
S904 SLOW −
S903 SLOW +
LINCS PWR
ND1
LIQUID CRYSTAL DISPLAY
X102 32.768KHz
CT101 CLOCK
X101 4.19MHz
VIDEO
S/V (Q912)
CAMERA VTR
Q122
EVF (VF-16P)
POWER DC-DC CONVERTER
CAM POWER
VTR POWER
Q110 (1/2)
EVF POWER
IC102
VTR UNREG (W101 ⑦)
5V REG
Q112
IC103
VOLTAGE DETECT
Q113
Q114
EVER +B
VDD
BATT IN
Q118 (1/2), Q119 - 121 RESET
Q116 LITHIUM BATTERY DETECT
Q117 LITHIUM BATTERY PRE END DETECT
(See page 140.)
LI-8P BOARD
LITHIUM BATTERY
LI 3V
FADER CONT
SS-88P BOARD
(SYSTEM CONTROL)
(See page 130.)
IC001 (1/2)
MECHANISM CONTROL
SYSTEM SYNC
COSMO CS
RESET
DATA TO SLVE
DATA TO MSTR
SCK
FERA
PCM INHIBIT
AF REC
FE RS
XTAL
EXTAL
X001 16MHz
MOTOR UNREG (CN004 ①,②)
RV001 BATTERY
BATTERY SENS
T/S LED
T/E LED
Q005 LED DRIVE
MO 0
MO 1
T REEL FG
S REEL FG
END SENS
TOP SENS
M IN 0
M IN 1
M IN 2
M IN 3
M IN 4
M IN 5
IC003 (1/2)
CLOG DET
Q008
Q012 TIME CONSTANT SWITCH
Q013 (1/2) PB RF DETECT
Q013 (1/2) DC REFERENCE
CLOG
CLOG CONT
IC002
LOADING MOTOR DRIVE
LD
UNLD
SYSTEM CONTROL
Q006, 007 5V REG
MOTOR UNREG (CN004 ①,②)
IC003 (1/2)
VOLTAG ERROR AMP
RP PB MODE
FE ON
E DIT
H CHG
SP/LP
VA PB MODE
V1 SWP
JOG
JOG VD
PB SP/LP
MK RST
PCM (MK-5)
MK RST
CS MARKER
DATA TO MASTER
DATA TO SLVE
SERVO
(SEE SERVO BLOCK)
RF SW P
COMP SYNC


IC101
MODE CONTROL
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
K OUT 6
K IN 7
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
K IN 0
K IN 1
DEW
REF VD
VA SP STB
CG STB
MECHA CS
SYSTEM RESET
DATA TO SLV
DATA TO MSTR
SCK
MARKER CS
ERV CS
TITLE CS
S RAM CS
LINCS PWR
S2
S21
COM 0
COM 3
XT1
XT2
X1
X2
TALLY
CAM POWER
VTR POWER
EVF POWER
VDD
BATT IN
RESET
EVER +B
ND1
LIQUID CRYSTAL DISPLAY
X102 32.768KHz
CT101 CLOCK
X101 4.19MHz
LITHIUM PREEND
Q118 (1/2)
Q105 — 107
DEW DETECT
Q115
LPF
CN101
CN161
W901
SYS RESET
EVR CS
LINCS SIG
DATA TO MST
DATA TO SLVE
SCK
FADER CONT
CAMERA (VC-55P)
DATA TO MSTR
DATA TO SLVE
TITLE CS
S RAM CS
DIGITAL TITLE
FADER CONT
SS-88P BOARD
(SYSTEM CONTROL)
(See page 130.)
W002
DEW
SYSTEM SYNC
VA SP STB
CG STB
COSMO CS
RST
DATA TO SLVE
DATA TO MSTR
SCK
CS MARKER
FE RS
PCM INHIBIT
AF REC
IC001 (1/2)
MECHANISM CONTROL
SYSTEM SYNC
COSMO CS
RESET
DATA TO SLVE
DATA TO MSTR
SCK
FERA
PCM INHIBIT
AF REC
XTAL
EXTAL
X001 16MHz
BATTERY SENS
MOTOR UNREG (CN004 ①,②)
RV001 BATTERY
MK RST
SYSTEM CONTROL
SERVO (SEE SERVO BLOCK)
RF SW P
COMP SYNC
T/S LED
T/E LED
MO 0
MO 1
T REEL FG
S REEL FG
END SENS
TOP SENS
M IN 0
M IN 1
M IN 2
M IN 3
M IN 4
M IN 5
SS 5V
CLOG
CLOG CONT
LD
UNLD
RP PB MODE
FE ON
E DIT
H CHG
SP/LP
VA PB MODE
VI SWP
JOG
JOG VD
PB SP/LP
PCM (MK-5)
MK RST
CS MARKER
SCK
DATA TO MASTER
DATA TO SLVE
Q008
Q012 TIME CONSTANT SWITCH
IC003 (1/2)
CLOG DET
Q013 (1/2) PB RF DETECT
Q013 (1/2) DC REFERENCE
IC002
LOADING MOTER DRIVE
Vcc
5V
Q006,007 5V REG
MOTOR UNREG (CN004 ①,②)
2.5V
IC003 (1/2)
VOLTAGE ERROR AMP
Q005 LED DRIVE
Q003 TAPE TOP DETECT
Q001 TAPE END DETECT
D005
Q011
CN002
DEW (+)
DEW SENSOR
W006
REEL LED
T REEL FG
TOP SENS
TOP END LED
M OUT 1
5V (Q006)
5V
S REEL FG
END SENS
M IN 0
M IN 1
M IN 2
M IN 3
M OUT 0
CN003
L M LOAD
L M UNLOAD
LOADING MOTOR
W001
(See page 129.)
CC-18P BOARD
CN003
CN002
CN001
TAPE LED
REC PROOF
MPHG
ME/MP
COM
MODE SW 0
MODE SW 1
MODE SW 2
CC DOWN
COM
FP-90 BOARD
(See page 129.)
D303 T REEL FG SENSOR
Q302 TAPE TOP SENSER
D302 TAPE LED
S302
REC PROOF
MP HG
ME/MP
FP-89 BOARD
(See page 129.)
D301 S REEL FG SENSOR
Q301 TAPE END SENSOR
S
MODE SWITCH
VI-71 BOARD (See page 109.)
W404
RP PB MODE
FE ON
E DET
RF SWP
H CHG
PB RF
SP/LP
VA PB MODE
VI SWP
JOG
JOG VD
COMP SYNC
PB SP/LP
DATA TO MASTER
DATA TO SLVE
SCK
RST
CG STB
VA SP STB
CN404
RP PB MODE
FE ON
RF SWP
H CHG
SP/LP
E/L
ME/MP
TO VIDEO(1) (MR-20 BOARD)
CN405
E DET
AGC SLOW
PB RF
VA PB MODE
VI SWP
JOG
JOG VD
COMP SYNC
PB SP/LP
E/L
ME/MP
EDIT
CAM/LINE
V MUTE
VIDEO(1)
IC405
EXPANTION PORT
STB
DATA
SCK
OE
E/L
ME/MP
EDIT
CAM/LINE
V MUTE
A MUTE
AGC SLOW
DS ON
DATA SCREEN ON
DATA TO SLVE
SCK
CG STB
CN401
FADER CONT
AUDIO MUTE
RF SWP
VA PB MODE
CAM/LINE
SP/LP
TO AUDIO (AT-7P BOARD)
RP PB MODE
TO SERVO (AT-7P BOARD)
CN403
FADER CONT

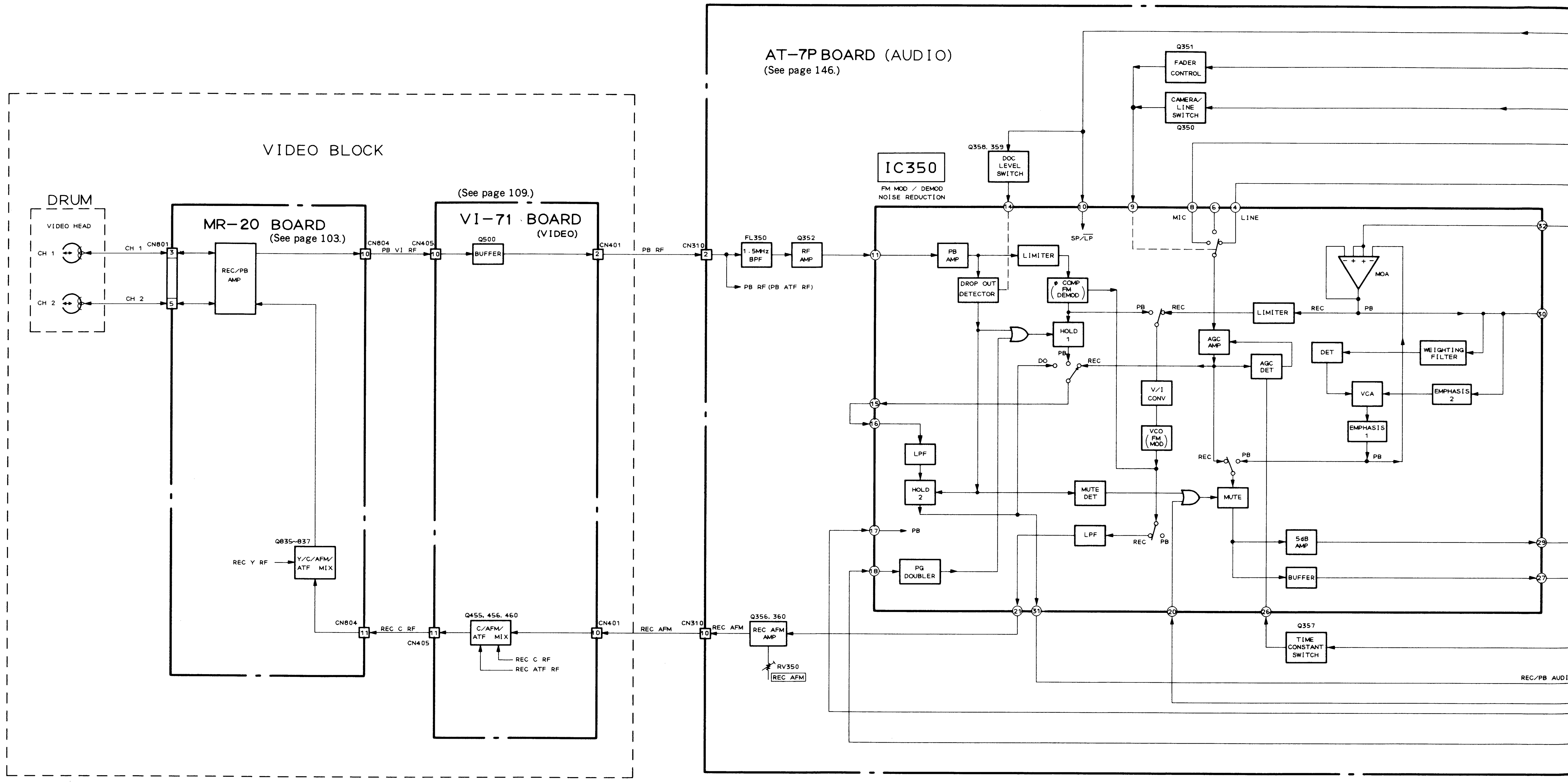
3-11. Mode Control IC Terminal Function

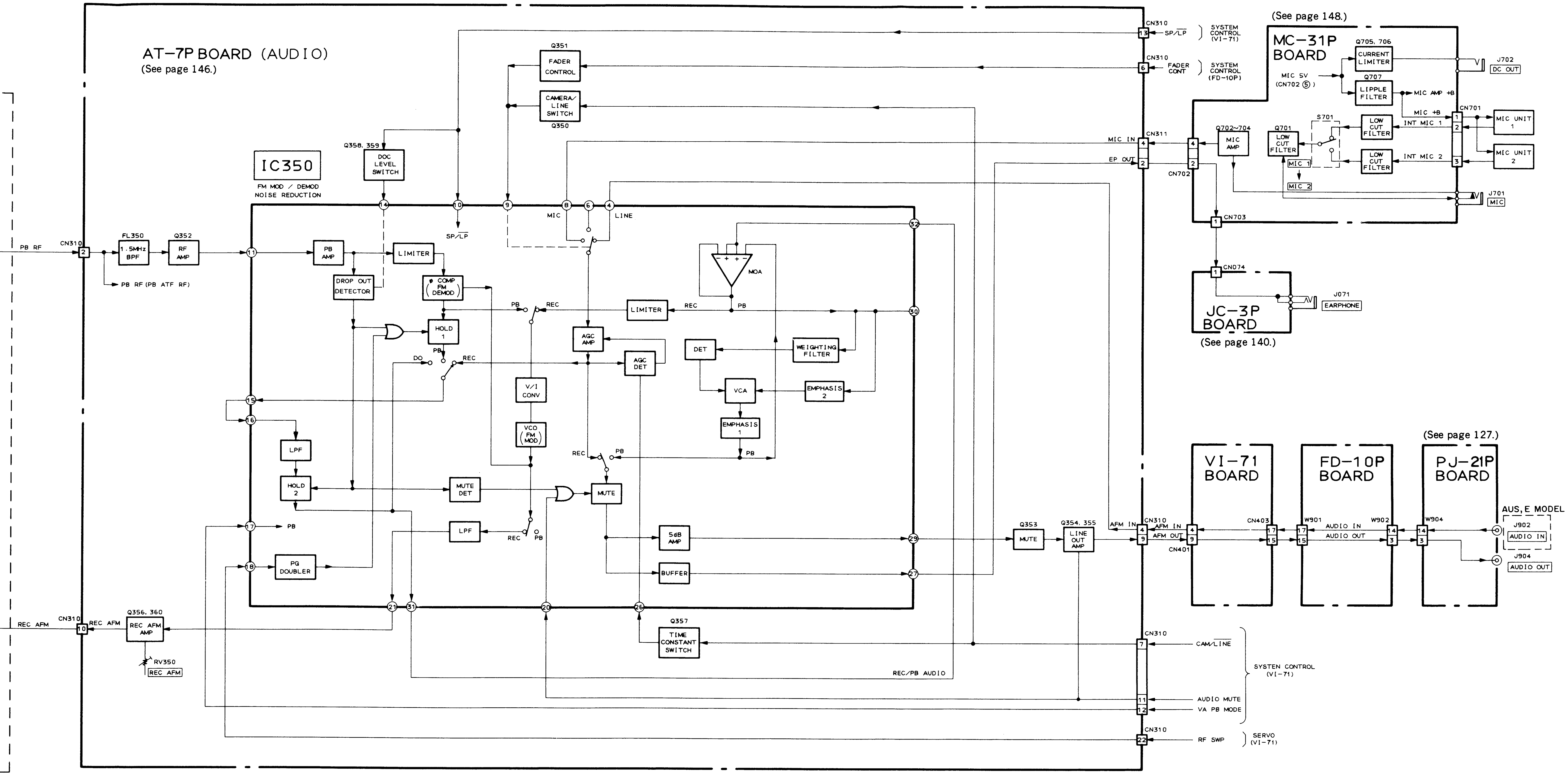
• FD-10P BOARD IC101 (μPD75316)

Pin No.	Port name	I/O	ACT.	Function
1	S12	O		LCD segment terminal drive output.
2	S13	O		
3	S14	O		
4	S15	O		
5	S16	O		
6	S17	O		
7	S18	O		
8	S19	O		
9	S20	O		
10	S21	O		
11	S22	—	—	——
12	S23	—	—	——
13	$\overline{\text{EVR CS}}$	O	L	EVR microcomputer communication chip select output.
14	$\overline{\text{MECHA CS}}$	O	L	MECHA Controller commnunication chip select signal.
15	TITLE CS	O	H	Title controller chip select output.
16	SRAM CS	O	H	SRAM chip select output. Title display : “HIGH”.
17	CG STB	O	H	Strobe signal for charactor generator.
18	$\overline{\text{VA SP STB}}$	O	H	Strobe signal for sevies parallel of VIDEO.
19	——			
20	——			
21	COM 0	O		LCD common terminal drive output 0.
22	COM 1	O		LCD common terminal drive output 1.
23	COM 2	O		LCD common terminal drive output 2.
24	COM 3	O		LCD common terminal drive output 3.
25	BIAS	O	—	Fixed “LOW”.
26	VLC 0	I	—	LCD power input terminal.
27	VLC 1	I	—	
28	VLC 2	I	—	
29	$\overline{\text{CAM POWER}}$	O	L	Camera power ON/OFF signal.
30	$\overline{\text{VTR POWER}}$	O	L	VTR power ON/OFF signal.
31	($\overline{\text{EVF POWER}}$)	O	L	Not used. (EVF power ON/OFF signal).
32	$\overline{\text{TALLY}}$	O	L	TALLY LED ON/OFF signal output.
33	GND	—	—	GND terminal.
34	$\overline{\text{K OUT 0}}$	O	L	Key matrix output 0.
35	$\overline{\text{K OUT 1}}$	O	L	Key matrix output 1.
36	$\overline{\text{K OUT 2}}$	O	L	Key matrix output 2.
37	$\overline{\text{K OUT 3}}$	O	L	Key matrix output 3.
38	$\overline{\text{BATT IN}}$	I	L	BATTERY attached or detached detection.
39	$\overline{\text{CLK}}$	I/O	L	“O” : Mode-controller clock, “I” CAMERA microcomputer clock. “I” during pin ⑬ $\overline{\text{EVRC S}}$ is “LOW”, nomally “O” port.
40	DATA TO SLV	O	H	Communication data from mode-controller to system-controll/servo controller.
41	DATA TO MST	I	H	Communication data from another microcomputer.
42	REF V_d	I	L	SYSTEM SYNC.
43	$\overline{\text{DEW}}$	I	L	DEW detect signal.
44	$\overline{\text{LINCS PWR}}$	I	L	Input for release microcomputer stand by to turn on the unit from external with remote commander.
45	——			——
46	——			——
47	$\overline{\text{K OUT 4}}$	O	L	Key matrix output signal.
48	$\overline{\text{K OUT 5}}$	O	L	
49	$\overline{\text{K OUT 6}}$	O	L	
50	FADER PWM	O	H	PWM signal for CAMERA FADER output.
51	$\overline{\text{MARKER CS}}$	O	L	Video marker chip select signal.
52	——			——
53	$\overline{\text{SYSTEM RST}}$	O	L	Reset AF/SYSTEM CONTROLL microcomputers during Power ON.
54	V_{dd}	—	—	Positive power supply terminal.
55	XT 1	I		Display clock crystal oscillation connecting terminal.
56	XT 2	I		
57	——			——
58	X1	I		Main clock crystal oscillation connecting terminal.
59	X2	I		
60	K IN 0	I	L	Key matrix signal input.
61	K IN 1	I	L	
62	K IN 2	I	L	
63	K IN 3	I	L	Key matrix signal input.
64	K IN 4	I	L	
65	K IN 5	I	L	
66	K IN 6	I	L	
67	K IN 7	I	L	
68	$\overline{\text{RESET}}$	I	L	Reset signal input.
69	S0	O	—	Not used.
70	S1	O	—	Not used.
71	S2	O		LCD segment terminal drive output.
72	S3	O		
73	S4	O		
74	S5	O		
75	S6	O		
76	S7	O		
77	S8	O		
78	S9	O		
79	S10	O		
80	S11	O		

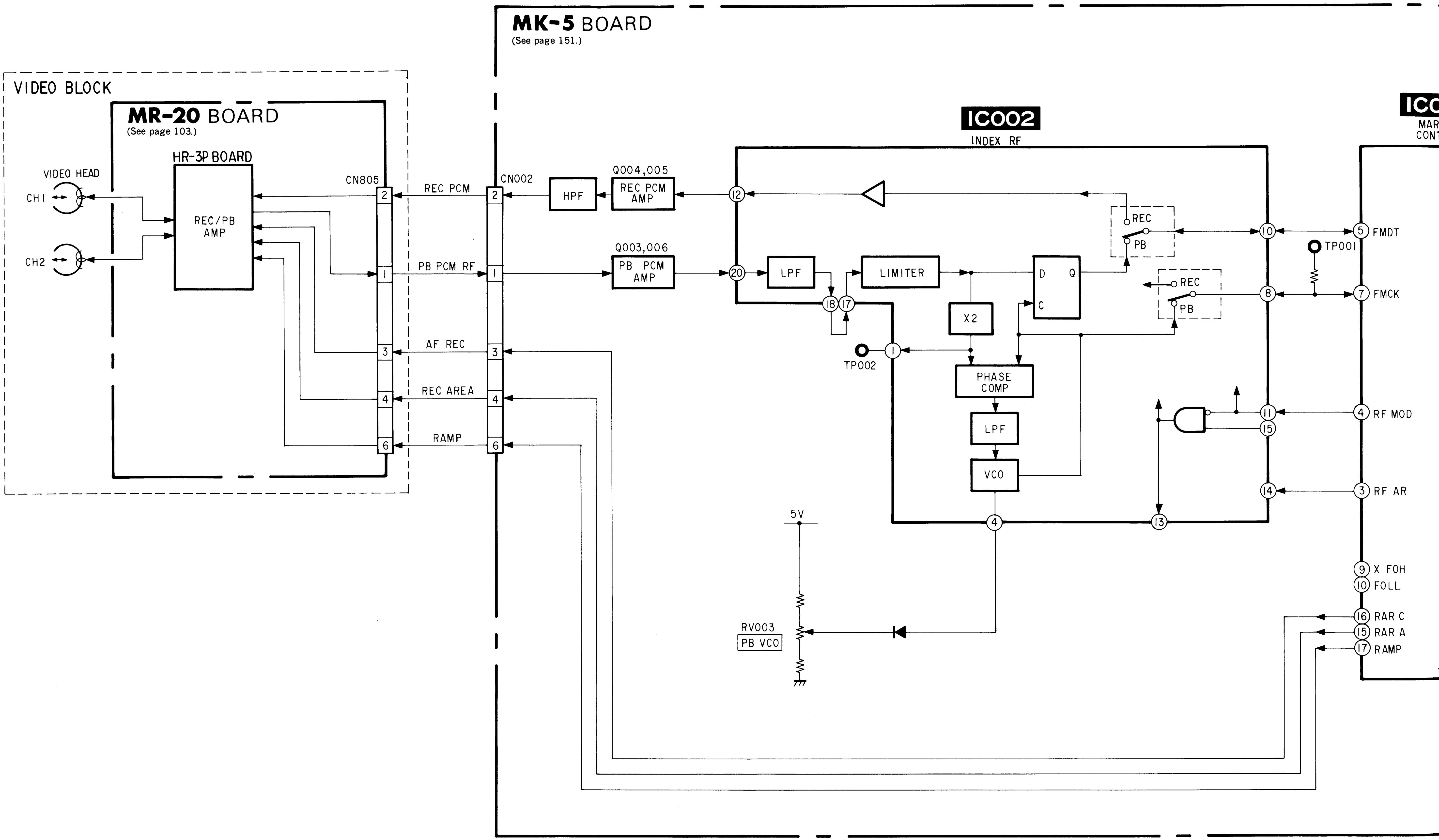
Pin No.	Port name	I/O	ACT.	Function
40	DATA TO SLV	O	H	Communication data from mode-controller to system-controll/servo controller.
41	DATA TO MST	I	H	Communication data from another microcomputer.
42	REF V_d	I	L	SYSTEM SYNC.
43	DEW	I	L	DEW detect signal.
44	LINCS PWR	I	L	Input for release microcomputer stand by to turn on the unit from external with remote commander.
45	———			———————
46	———			———————
47	K OUT 4	O	L	Key matrix output signal.
48	K OUT 5	O	L	
49	K OUT 6	O	L	
50	FADER PWM	O	H	PWM signal for CAMERA FADER output.
51	MARKER CS	O	L	Video marker chip select signal.
52	———			———————
53	SYSTEM RST	O	L	Reset AF/SYSTEM CONTROLL microcomputers during Power ON.
54	V_{dd}	—	—	Positive power supply terminal.
55	XT 1	I		Display clock crystal oscillation connecting terminal.
56	XT 2	I		
57	———			———————
58	X1	I		Main clock crystal oscillation connecting terminal.
59	X2	I		
60	K IN 0	I	L	Key matrix signal input.
61	K IN 1	I	L	
62	K IN 2	I	L	
63	K IN 3	I	L	Key matrix signal input.
64	K IN 4	I	L	
65	K IN 5	I	L	
66	K IN 6	I	L	
67	K IN 7	I	L	
68	RESET	I	L	Reset signal input.
69	S0	O	—	Not used.
70	S1	O	—	Not used.
71	S2	O		LCD segment terminal drive output.
72	S3	O		
73	S4	O		
74	S5	O		
75	S6	O		
76	S7	O		
77	S8	O		
78	S9	O		
79	S10	O		
80	S11	O		

3-12. AUDIO BLOCK DIAGRAM


VIDEO BLOCK
DRUM
VIDEO HEAD
CH 1
CH 2
CN801
3
5
MR-20 BOARD
(See page 103.)
REC/PB AMP
Q835~837
Y/C/AFM/ ATF MIX
REC Y RF
CN804
10
PB VI RF
11
REC C RF
(See page 109.)
VI-71 BOARD
(VIDEO)
CN405
Q500
BUFFER
Q455, 456, 460
C/AFM/ ATF MIX
REC C RF
REC ATF RF
CN401
2
PB RF
REC AFM
AT-7P BOARD (AUDIO)
(See page 146.)
CN310
FL350
1.5MHz BPF
Q352
RF AMP
PB RF (PB ATF RF)
Q356, 360
REC AFM AMP
RV350
REC AFM
IC350
FM MOD / DEMOD
NOISE REDUCTION
Q358, 359
DOC LEVEL SWITCH
Q351
FADER CONTROL
CAMERA/ LINE SWITCH
Q350
SP/LP
MIC
LINE
14
10
9
8
6
4
11
PB AMP
LIMITER
DROP OUT DETECTOR
φ COMP (FM DEMOD)
HOLD 1
PB
REC
DO
V/I CONV
VCO (FM MOD)
AGC AMP
AGC DET
LIMITER
MOA
DET
WEIGHTING FILTER
VCA
EMPHASIS 2
EMPHASIS 1
15
16
LPF
HOLD 2
MUTE DET
MUTE
17
PB
LPF
18
PG DOUBLER
5dB AMP
BUFFER
32
30
29
27
21
31
20
26
Q357
TIME CONSTANT SWITCH
REC/PB AUDI


AT-7P BOARD (AUDIO)
(See page 146.)
IC350
FM MOD / DEMOD
NOISE REDUCTION
PB RF
CN310
FL350
1.5MHz BPF
Q352
RF AMP
PB RF (PB ATF RF)
PB AMP
LIMITER
DROP OUT DETECTOR
COMP FM DEMOD
HOLD 1
DO
REC
PB
LIMITER
MOA
WEIGHTING FILTER
DET
AGC AMP
AGC DET
V/I CONV
VCO (FM MOD)
VCA
EMPHASIS 2
EMPHASIS 1
LPF
HOLD 2
MUTE DET
MUTE
LPF
PG DOUBLER
5dB AMP
BUFFER
Q351
FADER CONTROL
CAMERA/LINE SWITCH
Q350
Q358, 359
DOC LEVEL SWITCH
SP/LP
MIC
LINE
Q356, 360
REC AFM AMP
REC AFM
RV350
REC AFM
Q357
TIME CONSTANT SWITCH
REC/PB AUDIO
Q353
MUTE
Q354, 355
LINE OUT AMP
AFM IN
SP/LP
SYSTEM CONTROL (VI-71)
FADER CONT
SYSTEM CONTROL (FD-10P)
CN311
MIC IN
EP OUT
CAM/LINE
SYSTEN CONTROL (VI-71)
AUDIO MUTE
VA PB MODE
RF SWP
SERVO (VI-71)
(See page 148.)
MC-31P BOARD
MIC 5V (CN702 ⑤)
Q705, 706
CURRENT LIMITER
Q707
LIPPLE FILTER
MIC AMP +B
MIC +B
J702
DC OUT
CN701
MIC UNIT 1
MIC UNIT 2
INT MIC 1
INT MIC 2
LOW CUT FILTER
S701
Q701
Q702~704
MIC AMP
MIC 1
MIC 2
CN702
CN703
J701
MIC
CN074
JC-3P BOARD
(See page 140.)
J071
EARPHONE
VI-71 BOARD
FD-10P BOARD
(See page 127.)
PJ-21P BOARD
AFM OUT
CN401
CN403
W901
W902
W904
AUDIO IN
AUDIO OUT
AUS, E MODEL
J902
AUDIO IN
J904
AUDIO OUT

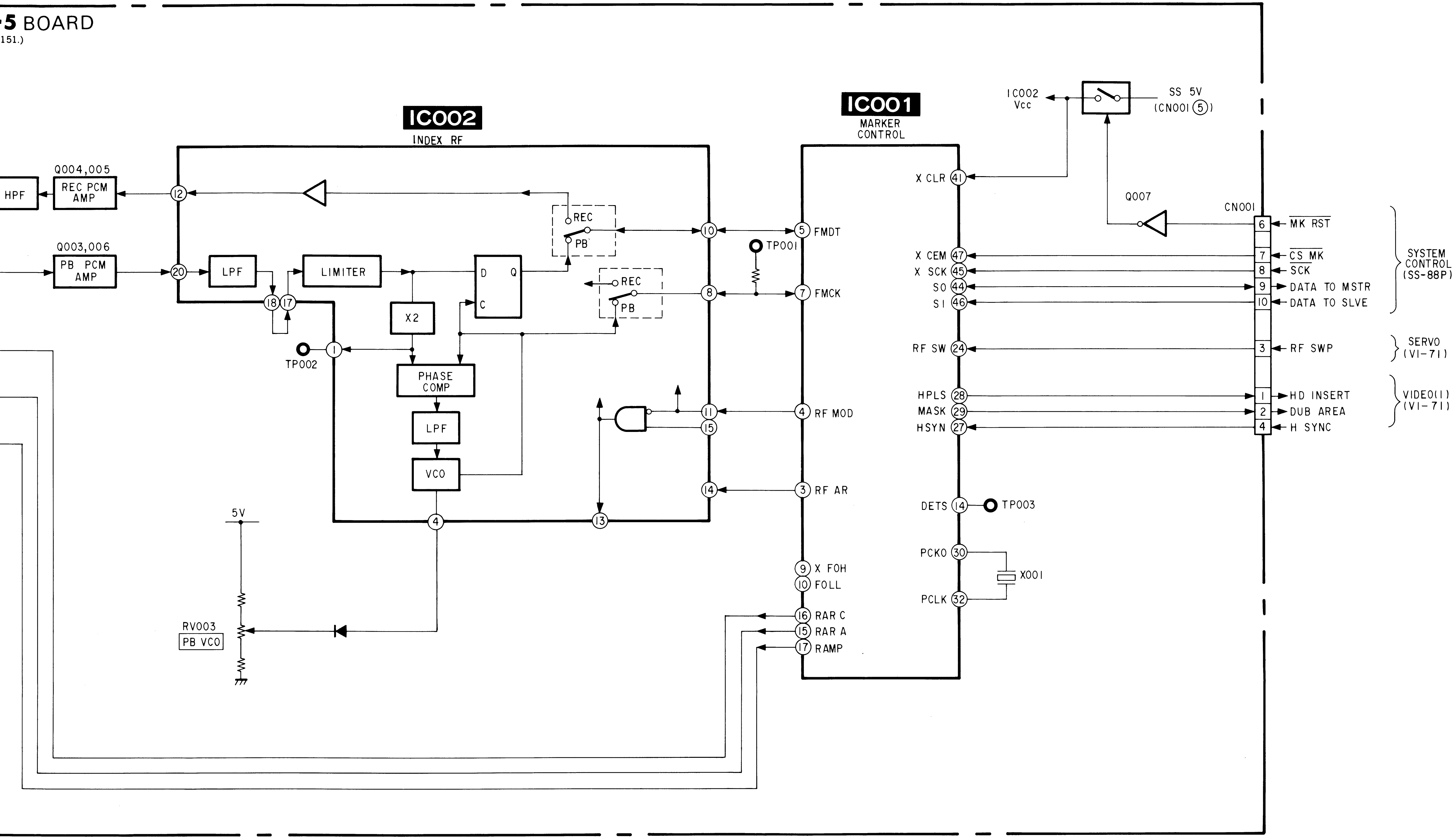
3-13. INDEX BLOCK DIAGRAM



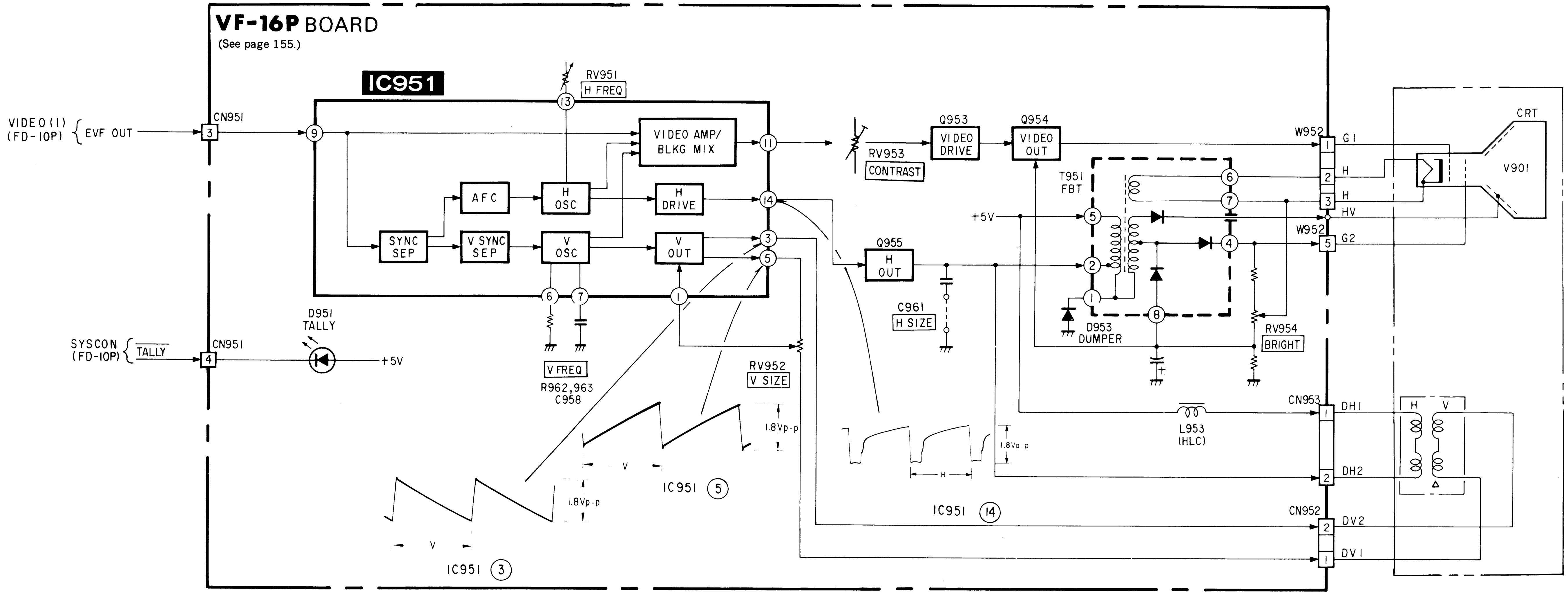
VIDEO BLOCK
MR-20 BOARD
(See page 103.)
HR-3P BOARD
VIDEO HEAD
CH1
CH2
REC/PB AMP
CN805
REC PCM
PB PCM RF
AF REC
REC AREA
RAMP
MK-5 BOARD
(See page 151.)
CN002
HPF
Q004,005
REC PCM AMP
Q003,006
PB PCM AMP
IC002
INDEX RF
LPF
LIMITER
X2
D
Q
C
REC
PB
PHASE COMP
LPF
VCO
TP002
TP001
5V
RV003
PB VCO
FMDT
FMCK
RF MOD
RF AR
X FOH
FOLL
RAR C
RAR A
RAMP
IC0
MAR
CON

5 BOARD

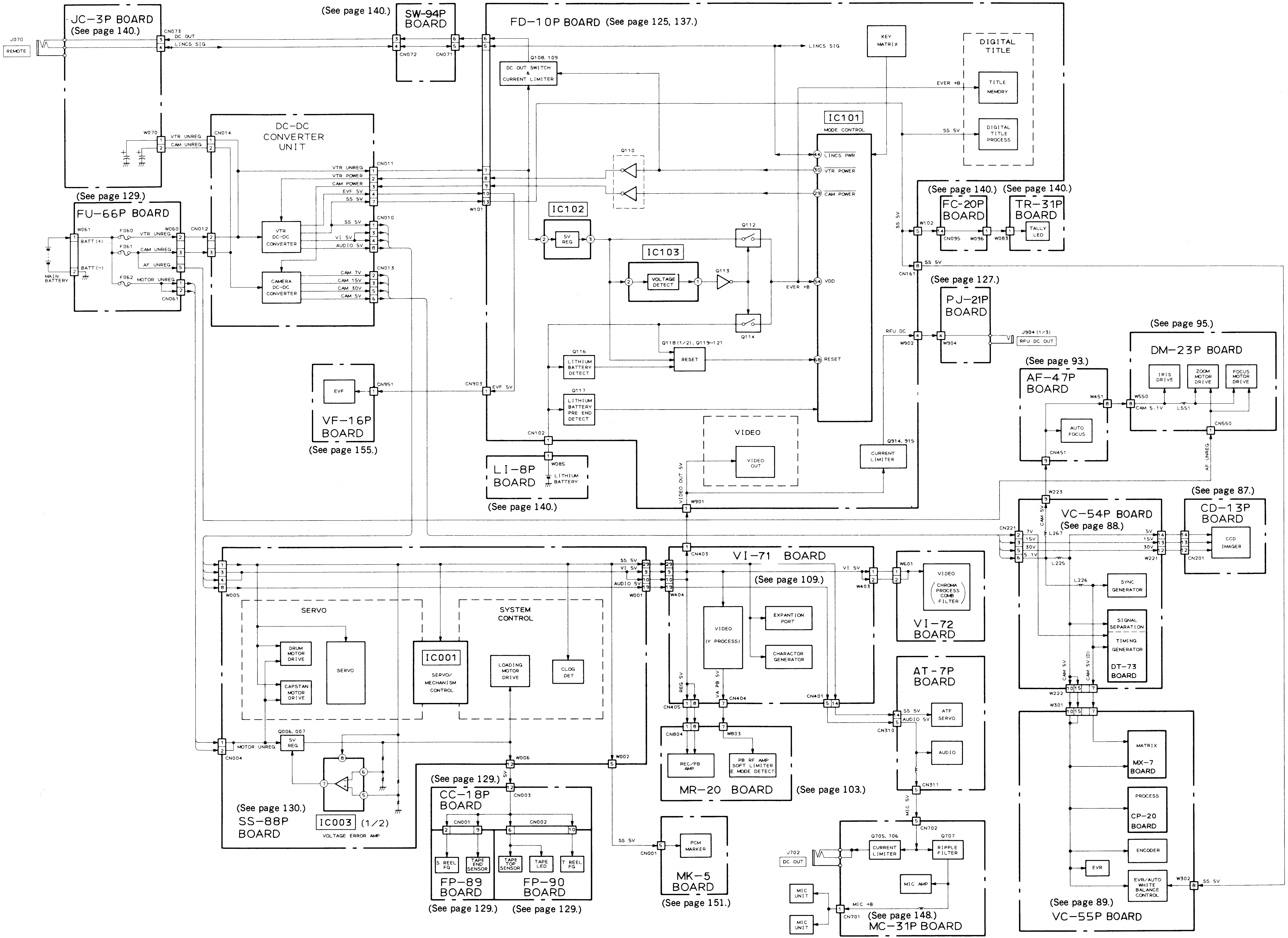
151.)


IC002
INDEX RF
IC001
MARKER CONTROL
HPF
Q004,005
REC PCM AMP
Q003,006
PB PCM AMP
LPF
LIMITER
D
Q
C
X2
PHASE COMP
LPF
VCO
REC
PB
REC
PB
TP001
TP002
TP003
5V
RV003
PB VCO
IC002 Vcc
SS 5V
(CN001 ⑤)
Q007
CN001
X CLR ㊶
⑤ FMDT
⑦ FMCK
X CEM ㊼
X SCK ㊺
SO ㊹
SI ㊻
RF SW ㉔
HPLS ㉘
MASK ㉙
HSYN ㉗
④ RF MOD
③ RF AR
DETS ⑭
PCKO ㉚
PCLK ㉜
X001
⑨ X FOH
⑩ FOLL
⑯ RAR C
⑮ RAR A
⑰ RAMP
⑫
⑳
⑱
⑰
①
⑩
⑧
⑪
⑮
⑭
④
⑬
6 MK RST
7 CS MK
8 SCK
9 DATA TO MSTR
10 DATA TO SLVE
3 RF SWP
1 HD INSERT
2 DUB AREA
4 H SYNC
SYSTEM CONTROL (SS-88P)
SERVO (VI-71)
VIDEO(1) (VI-71)

3-14. VIEWFINDER BLOCK DIAGRAM

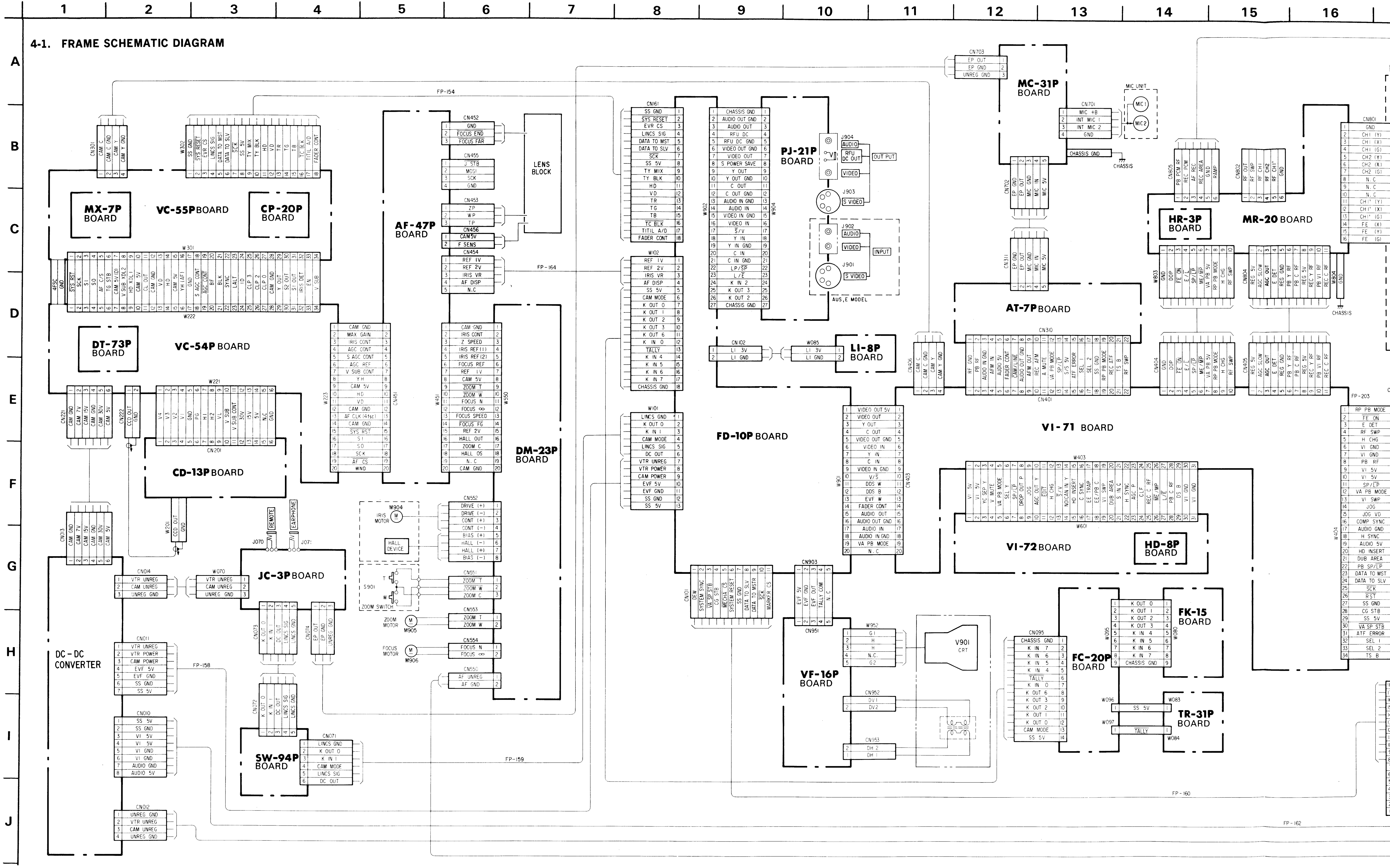

VF-16P BOARD
(See page 155.)
IC951
VIDEO (1) (FD-10P)
EVF OUT
CN951
SYSCON (FD-10P)
TALLY
D951 TALLY
+5V
RV951
H FREQ
VIDEO AMP/ BLKG MIX
AFC
H OSC
H DRIVE
SYNC SEP
V SYNC SEP
V OSC
V OUT
V FREQ
R962, 963 C958
RV952
V SIZE
RV953
CONTRAST
Q953
VIDEO DRIVE
Q954
VIDEO OUT
Q955
H OUT
C961
H SIZE
T951 FBT
D953 DUMPER
RV954
BRIGHT
L953 (HLC)
W952
CN953
CN952
G1
H
HV
G2
DH1
DH2
DV2
DV1
CRT
V901
H
V
1.8Vp-p
V
IC951 ③
IC951 ⑤
H
IC951 ⑭

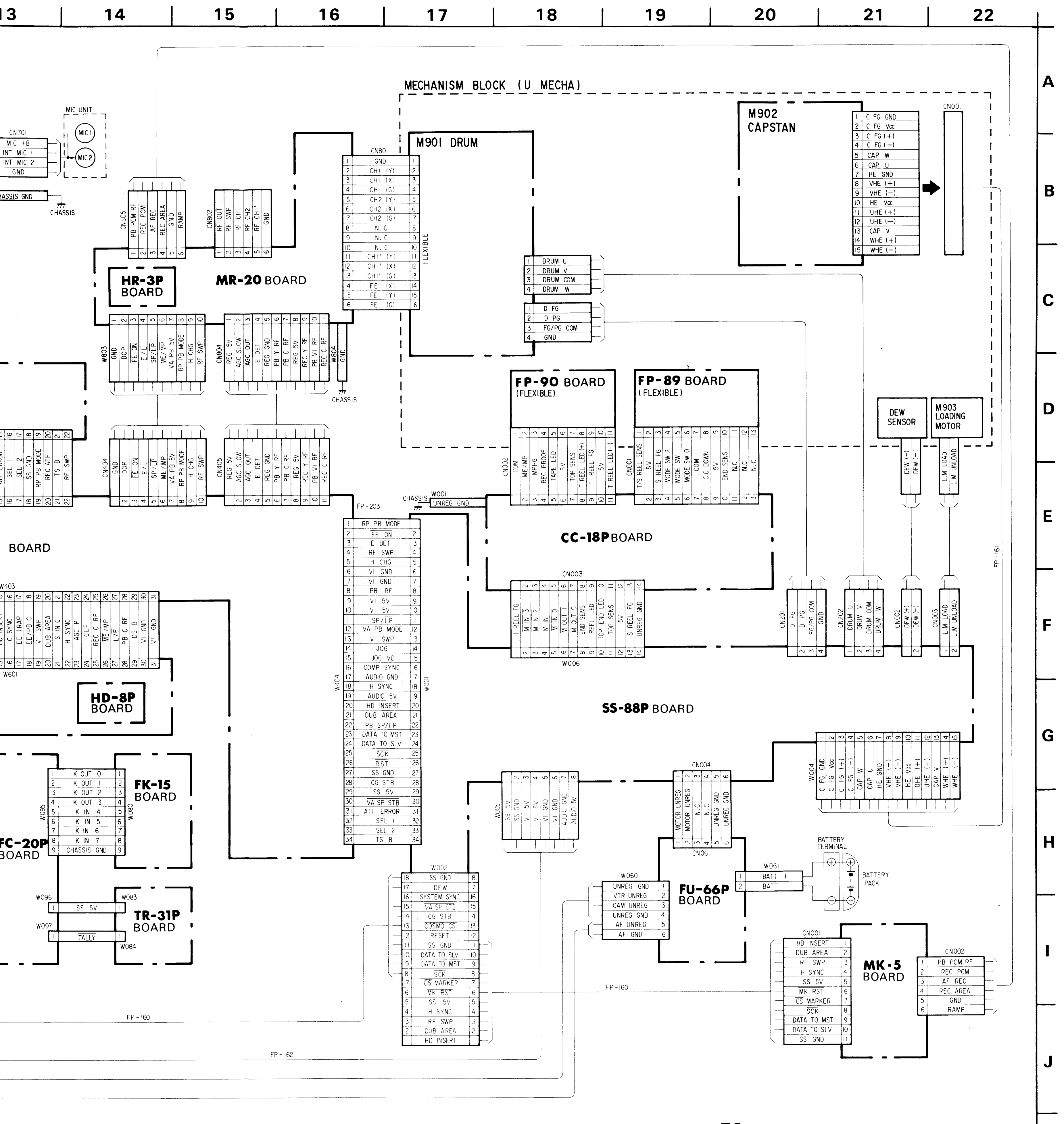
3-15. POWER BLOCK DIAGRAM


JC-3P BOARD
(See page 140.)
J070
REMOTE
CN073
DC OUT
LINCS SIG
W070
VTR UNREG
CAM UNREG
(See page 140.)
SW-94P BOARD
CN072
CN071
FD-10P BOARD (See page 125, 137.)
Q108, 109
DC OUT SWITCH & CURRENT LIMITER
LINCS SIG
KEY MATRIX
DIGITAL TITLE
TITLE MEMORY
DIGITAL TITLE PROCESS
EVER +B
SS 5V
IC101
MODE CONTROL
LINCS PWR
VTR POWER
CAM POWER
VDD
RESET
Q110
IC102
5V REG
IC103
VOLTAGE DETECT
Q112
Q113
Q114
Q118 (1/2), Q119-121
Q116
LITHIUM BATTERY DETECT
Q117
LITHIUM BATTERY PRE END DETECT
RESET
CN102
W101
CN903
EVF 5V
DC-DC CONVERTER UNIT
CN014
CN011
VTR UNREG
VTR POWER
CAM POWER
EVF 5V
SS 5V
CN010
VTR DC-DC CONVERTER
SS 5V
VI 5V
AUDIO 5V
CN013
CAMERA DC-DC CONVERTER
CAM 7V
CAM 15V
CAM 30V
CAM 5V
(See page 129.)
FU-66P BOARD
W061
BATT (+)
BATT (−)
MAIN BATTERY
F060
F061
F062
W060
VTR UNREG
CAM UNREG
AF UNREG
MOTOR UNREG
CN012
CN061
EVF
CN951
VF-16P BOARD
(See page 155.)
LI-8P BOARD
W085
LITHIUM BATTERY
(See page 140.)
VIDEO
VIDEO OUT
VIDEO OUT 5V
W901
Q914, 915
CURRENT LIMITER
(See page 140.) FC-20P BOARD
(See page 140.) TR-31P BOARD
W102
CN095
W096
W083
TALLY LED
CN161
SS 5V
(See page 127.)
PJ-21P BOARD
RFU DC
W902
W904
J904 (1/3)
RFU DC OUT
(See page 95.)
DM-23P BOARD
IRIS DRIVE
ZOOM MOTOR DRIVE
FOCUS MOTOR DRIVE
W550
CAM 5.1V
L551
CN550
AF UNREG
(See page 93.)
AF-47P BOARD
W451
AUTO FOCUS
CN451
W223
VC-54P BOARD
(See page 88.)
CN221
7V
15V
30V
5.1V
L267
L225
L226
SYNC GENERATOR
SIGNAL SEPARATION
TIMING GENERATOR
DT-73 BOARD
CAM 5V
CAM 5V (D)
W222
W221
(See page 87.)
CD-13P BOARD
CN201
CCD IMAGER
W301
MATRIX
MX-7 BOARD
PROCESS
CP-20 BOARD
ENCODER
EVR
EVR/AUTO WHITE BALANCE CONTROL
W302
SS 5V
(See page 89.)
VC-55P BOARD
VI-71 BOARD
(See page 109.)
CN403
VI 5V
W403
VIDEO (Y PROCESS)
EXPANTION PORT
CHARACTOR GENERATOR
REG 5V
VA PB 5V
CN404
CN405
CN401
W404
W601
VIDEO (CHROMA PROCESS COMB FILTER)
VI-72 BOARD
AT-7P BOARD
SS 5V
AUDIO 5V
ATF SERVO
AUDIO
CN310
CN311
MIC 5V
CN804
W803
REC/PB AMP
PB RF AMP SOFT LIMITER E MODE DETECT
MR-20 BOARD
(See page 103.)
PCM MARKER
CN001
MK-5 BOARD
(See page 151.)
CN702
Q705, 706
CURRENT LIMITER
Q707
RIPPLE FILTER
MIC AMP
MIC +B
J702
DC OUT
MIC UNIT
MIC UNIT
CN701
(See page 148.)
MC-31P BOARD
W005
SS 5V
VI 5V
AUDIO 5V
W001
SERVO
DRUM MOTOR DRIVE
CAPSTAN MOTOR DRIVE
SERVO
IC001
SERVO/MECHANISM CONTROL
SYSTEM CONTROL
LOADING MOTOR DRIVE
CLOG DET
CN004
MOTOR UNREG
Q006, 007
5V REG
IC003 (1/2)
VOLTAGE ERROR AMP
(See page 130.)
SS-88P BOARD
W006
W002
(See page 129.)
CC-18P BOARD
CN003
CN001
CN002
S REEL FG
TAPE END SENSOR
TAPE TOP SENSOR
TAPE LED
T REEL FG
FP-89 BOARD
FP-90 BOARD
(See page 129.)
(See page 129.)

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM


MX-7P BOARD
VC-55P BOARD
CP-20P BOARD
DT-73P BOARD
VC-54P BOARD
CD-13P BOARD
AF-47P BOARD
LENS BLOCK
DM-23P BOARD
JC-3P BOARD
SW-94P BOARD
DC-DC CONVERTER
FD-10P BOARD
PJ-21P BOARD
LI-8P BOARD
VF-16P BOARD
V901 CRT
MC-31P BOARD
MIC UNIT
AT-7P BOARD
VI-71 BOARD
VI-72 BOARD
HD-8P BOARD
FC-20P BOARD
FK-15 BOARD
TR-31P BOARD
HR-3P BOARD
MR-20 BOARD
IRIS MOTOR M904
HALL DEVICE
ZOOM SWITCH S901
ZOOM MOTOR M905
FOCUS MOTOR M906
AUS, E MODEL
FP-154
FP-158
FP-159
FP-160
FP-162
FP-164
FP-203


13
14
15
16
17
18
19
20
21
22
A
B
C
D
E
F
G
H
I
J
MECHANISM BLOCK (U MECHA)
M901 DRUM
M902 CAPSTAN
MIC UNIT
MIC1
MIC2
CN701
MIC +B
INT MIC 1
INT MIC 2
GND
CHASSIS GND
CHASSIS
HR-3P BOARD
MR-20 BOARD
CN801
FLEXIBLE
DRUM U
DRUM V
DRUM COM
DRUM W
D FG
D PG
FG/PG COM
GND
C FG GND
C FG Vcc
C FG (+)
C FG (−)
CAP W
CAP U
HE GND
VHE (+)
VHE (−)
HE Vcc
UHE (+)
UHE (−)
CAP V
WHE (+)
WHE (−)
CN001
FP-90 BOARD (FLEXIBLE)
FP-89 BOARD (FLEXIBLE)
DEW SENSOR
M903 LOADING MOTOR
CC-18P BOARD
CN002
CN003
W803
CN804
W804
CN404
CN405
FP-203
W001
UNREG GND
BOARD
W403
W601
HD-8P BOARD
W404
W006
SS-88P BOARD
FP-161
CN201
CN202
CN302
CN303
W004
FK-15 BOARD
W095
W080
FC-20P BOARD
W096
W097
SS 5V
TALLY
W083
W084
TR-31P BOARD
W005
CN004
CN061
W002
W060
FU-66P BOARD
W061
BATT +
BATT −
BATTERY TERMINAL
BATTERY PACK
CN001
MK-5 BOARD
CN002
FP-160
FP-162

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

(In addition to this, the necessary note is printed in each block.)

- **For printed wiring boards.**
- ● : Through hole.
- ▒ : Pattern from the side which enables seeing.
- ▓ : Pattern of the rear side. *
- Circled numbers refer to waveforms.
- The parts with the indication of NOMT are not mounted.

Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

- **For schematic diagram.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W or 1/16W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊡ : nonflammable resistor.
- ⊡ : fusible resistor.
- ☐ : panel designation.
- △ : internal component.
- The parts with the indication of NOMT are not mounted.
- ☐ : adjustment for repair. *
- ━━ : B + Line *
- Circled numbers refer to waveforms. *
- ⇨ : IN/OUT direction of B (+, −) line. *

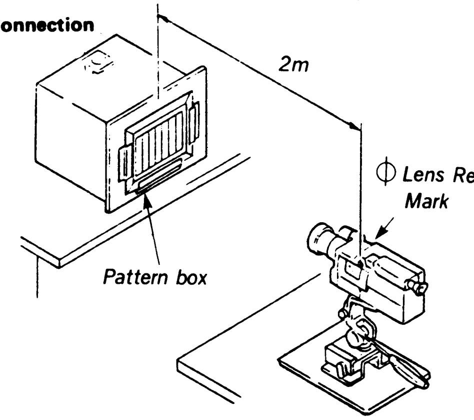
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

* indicated by the color red.

- **For voltage and waveforms. (CAM REC mode)**
- Voltage and waveform measuring conditions: *
  (1) Sample object: Pattern box color bars. *
  (2) Voltage values: Relative to ground, measured a DC digital multimeter (imped 10M-ohm or more). *

1. Connection


2m
Lens Re
Mark
Pattern box

2. Adjust the zooming of camera and the tripod so the output waveform of Fig. a and the picture of F can be obtain.

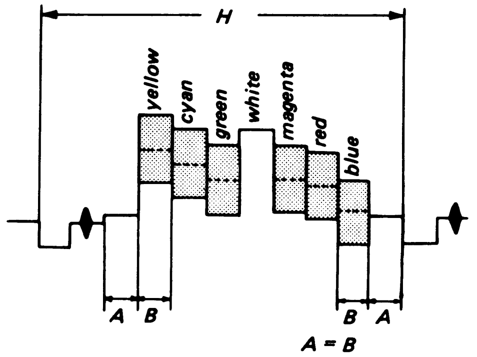

H
yellow
cyan
green
white
magenta
red
blue
A
B
B
A
A = B

Fig. a Video output waveform of J904 on PJ-21P board.

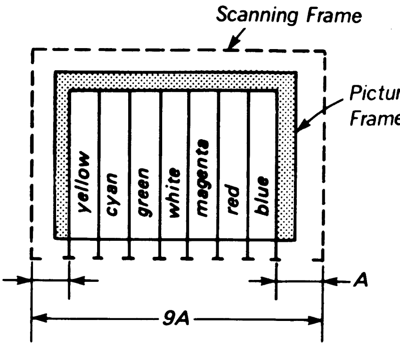
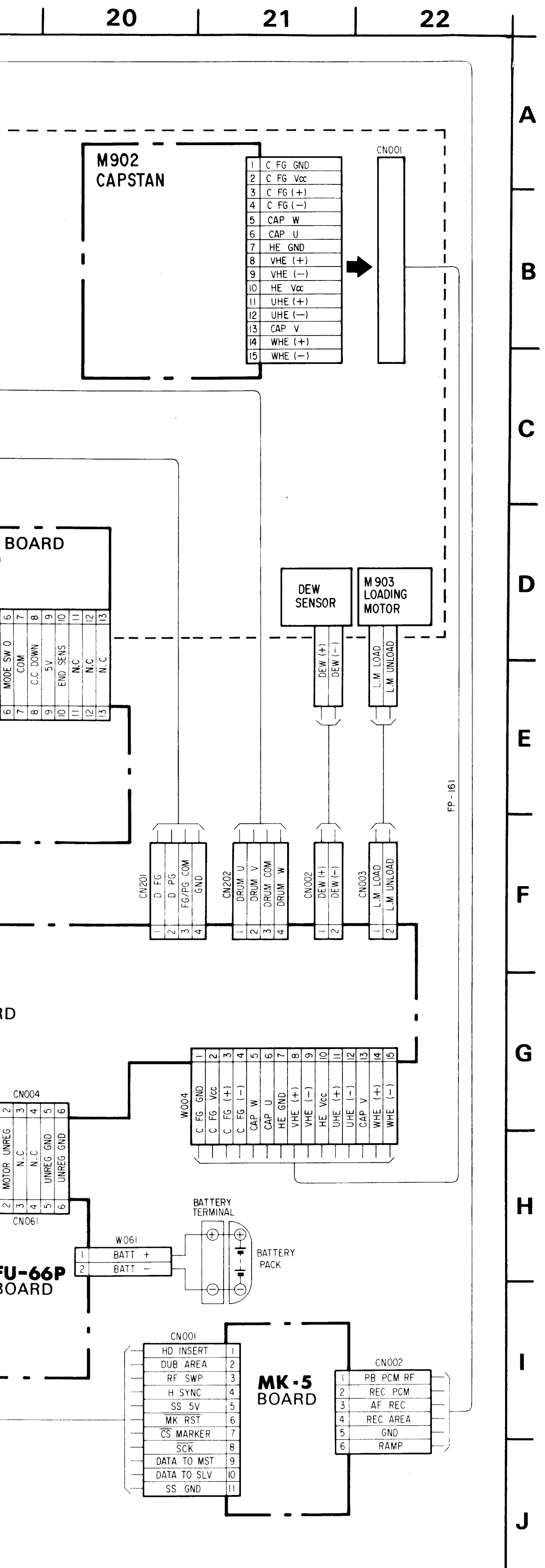

Scanning Frame
Pictur
Frame
yellow
cyan
green
white
magenta
red
blue
A
A
9A

Fig. b Picture of TV monitor screen

- **For voltage and waveforms. (REC/PB mode)**
- Voltages are dc between ground and measurement po
- Readings are taken with a color-bar signal input. *
- Readings are taken with a digital multimeter (DC10M
- Voltage variations may be noted due to norma production tolerances. *


20
21
22
A
B
C
D
E
F
G
H
I
J
M902
CAPSTAN
1 C FG GND
2 C FG Vcc
3 C FG (+)
4 C FG (−)
5 CAP W
6 CAP U
7 HE GND
8 VHE (+)
9 VHE (−)
10 HE Vcc
11 UHE (+)
12 UHE (−)
13 CAP V
14 WHE (+)
15 WHE (−)
CN001
BOARD
MODE SW 0
COM
C.C DOWN
5V
END SENS
N.C
N.C
N.C
DEW SENSOR
DEW (+)
DEW (−)
M903 LOADING MOTOR
L.M LOAD
L.M UNLOAD
FP-161
CN201
D FG
D PG
FG/PG COM
GND
CN202
DRUM U
DRUM V
DRUM COM
DRUM W
CN002
DEW (+)
DEW (−)
CN003
L.M LOAD
L.M UNLOAD
RD
W004
C FG GND
C FG Vcc
C FG (+)
C FG (−)
CAP W
CAP U
HE GND
VHE (+)
VHE (−)
HE Vcc
UHE (+)
UHE (−)
CAP V
WHE (+)
WHE (−)
CN004
MOTOR UNREG
N.C
N.C
UNREG GND
UNREG GND
CN061
W061
BATT +
BATT −
BATTERY TERMINAL
BATTERY PACK
FU-66P
BOARD
CN001
HD INSERT
DUB AREA
RF SWP
H SYNC
SS 5V
MK RST
CS MARKER
SCK
DATA TO MST
DATA TO SLV
SS GND
MK-5
BOARD
CN002
PB PCM RF
REC PCM
AF REC
REC AREA
GND
RAMP

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

- **For printed wiring boards.**
- ● : Through hole.
- ░ : Pattern from the side which enables seeing.
- ▓ : Pattern of the rear side.*
- Circled numbers refer to waveforms.
- The parts with the indication of NOMT are not mounted.

Caution:
Pattern face side: Parts on the pattern face side seen from (Conductor Side) the pattern face are indicated.
Parts face side: Parts on the parts face side seen from (Component Side) the parts face are indicated.

- **For schematic diagram.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W or 1/16W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊡ : nonflammable resistor.
- ∿ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- The parts with the indication of NOMT are not mounted.
- ▭ : adjustment for repair.*
- ━━ : B + Line*
- Circled numbers refer to waveforms.*
- ⇨ : IN/OUT direction of B (+, −) line.*

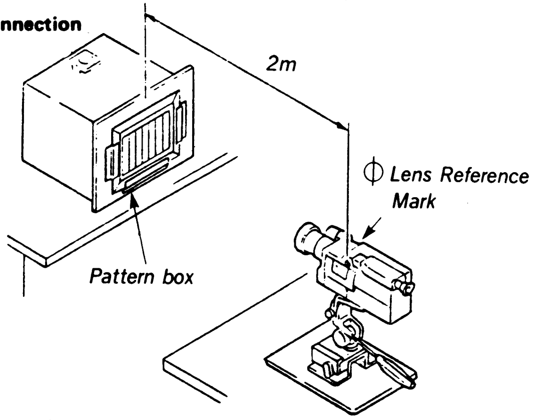
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

* indicated by the color red.

- **For voltage and waveforms. (CAM REC mode)**
- Voltage and waveform measuring conditions:*
  (1) Sample object: Pattern box color bars.*
  (2) Voltage values: Relative to ground, measured with a DC digital multimeter (impedance 10M-ohm or more).*

1. Connection


2m
⌽ Lens Reference Mark
Pattern box

2. Adjust the zooming of camera and the tripod so that the output waveform of Fig. a and the picture of Fig. b can be obtain.

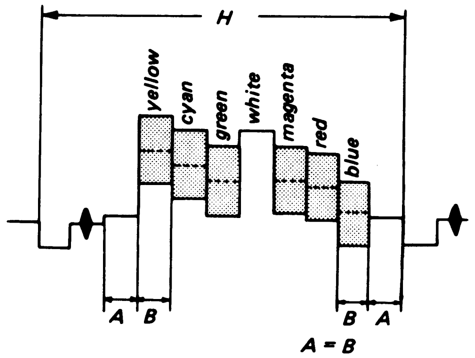


Fig. a Video output waveform of J904 on PJ-21P board.

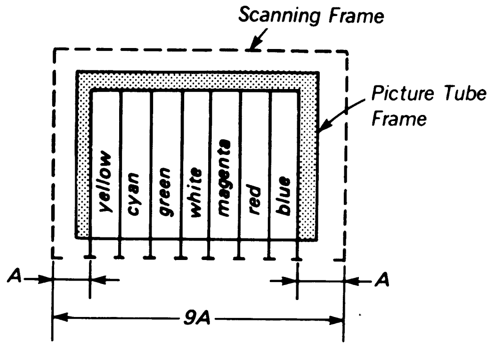

Scanning Frame
Picture Tube Frame
yellow
cyan
green
white
magenta
red
blue
A
A
9A

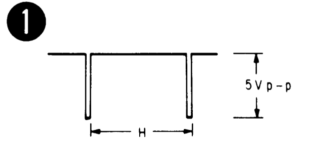
Fig. b Picture of TV monitor screen

- **For voltage and waveforms. (REC/PB mode)**
- Voltages are dc between ground and measurement points.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

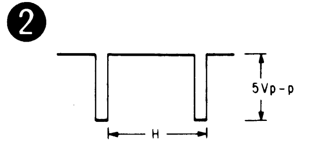
Precautions for replacement of CCD imager block.

- With a pair of IC200 (CCD imager) on the CD-13P complete board and IC005 (corrector ROM) on the DT-73P complete board, it is used a repair part of the CCD imager block.
  Since corrector ROM IC is manufactured to match the CCD imager, replacement of a single unit of the CCD imager corrector ROM cannot be allowed.
- When both a CCD imager and the corrector ROM, replace both the CCD imager and the corrector ROM, when a corrector ROM is not mounted on the service set, install a corrector ROM which is supplied anew.
- IC200 (CCD imager) is not mounted on the CD-13P complete board to be supplied as a repair part, and IC005 (corrector ROM) is not mounted on the DT-73P complete board to be supplied as a repair part. When the respective boards are replaced, remove the respective ICs from the old boards and install them to the new ones respectively.
- After the CCD imager block has been replaced, perform the entire adjustments of the camera section.
- CCD imager is structurally in case of being broken down by static electricity. For this reason, take care to handle it as well as MOS IC. Moreover, care should be taken for dust not to be stuck on the light reseiving section and for strong light not to get into there.

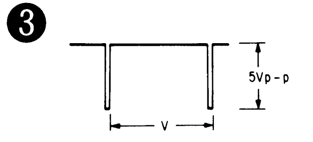
VC-54P BOARD

❶


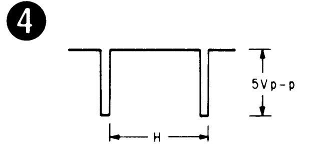
IC261 ① CAM REC

❷


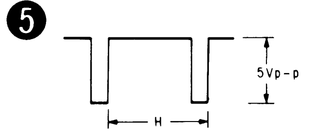
IC261 ㉙ CAM REC

❸


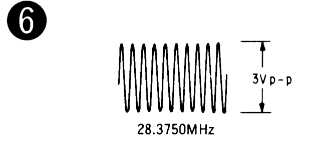
IC261 ㉚ CAM REC

❹


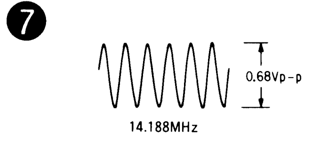
IC261 ㉛ CAM REC

❺


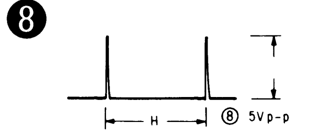
IC261 ㉜ CAM REC

❻


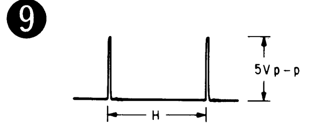
DT-73P ① CAM REC

❼


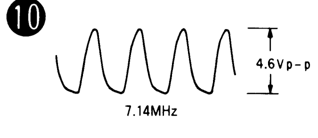
DT-73P ③ CAM REC

❽


DT-73P ⑧, ⑪ CAM REC

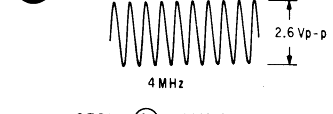
❾


DT-73P ⑨ CAM REC

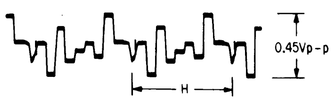
❿


DT-73P ⑮, ⑯ CAM REC

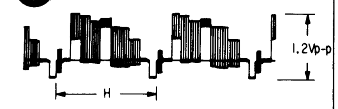
VC-55P BOARD

❶


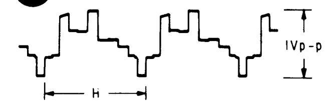
IC301 ㊶ CAM REC

❷


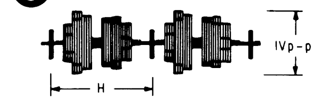
IC304 ① CAM REC

❸


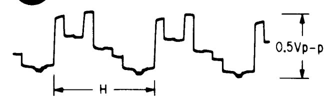
IC304 ⑳ CAM REC

❹


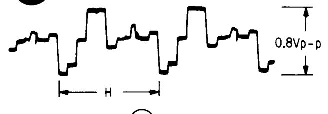
IC304 ㉒ CAM REC

❺


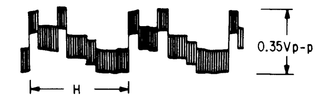
IC304 ㉔ CAM REC

❻


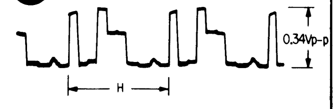
IC304 ㊵ CAM REC

❼


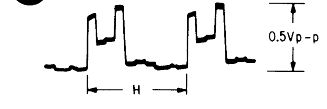
IC304 ㊺ CAM REC

❽


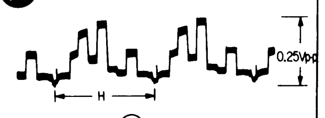
MX-7P ㉒ CAM REC

❾


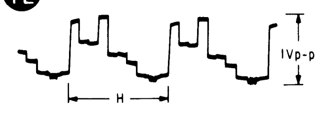
MX-7P ㉓ CAM REC

❿


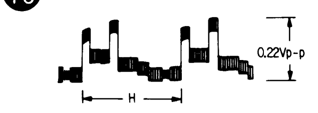
MX-7P ㉕ CAM REC

⓫


MX-7P ㉖ CAM REC

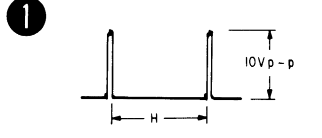
⓬


MX-7P ㉚ CAM REC

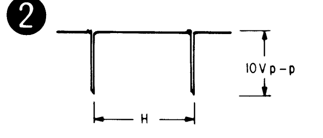
⓭


MX-7P ㊴ CAM REC

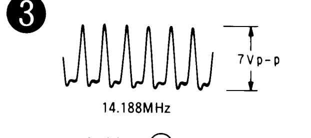
CD-13P BOARD

❶


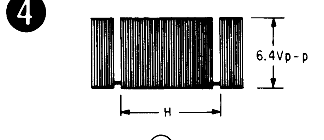
IC200 ①, ② CAM REC

❷


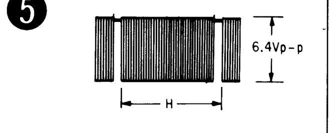
IC200 ③, ⑥ CAM REC

❸


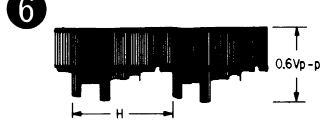
IC200 ⑯ CAM REC

❹


IC200 ⑱ CAM REC

❺


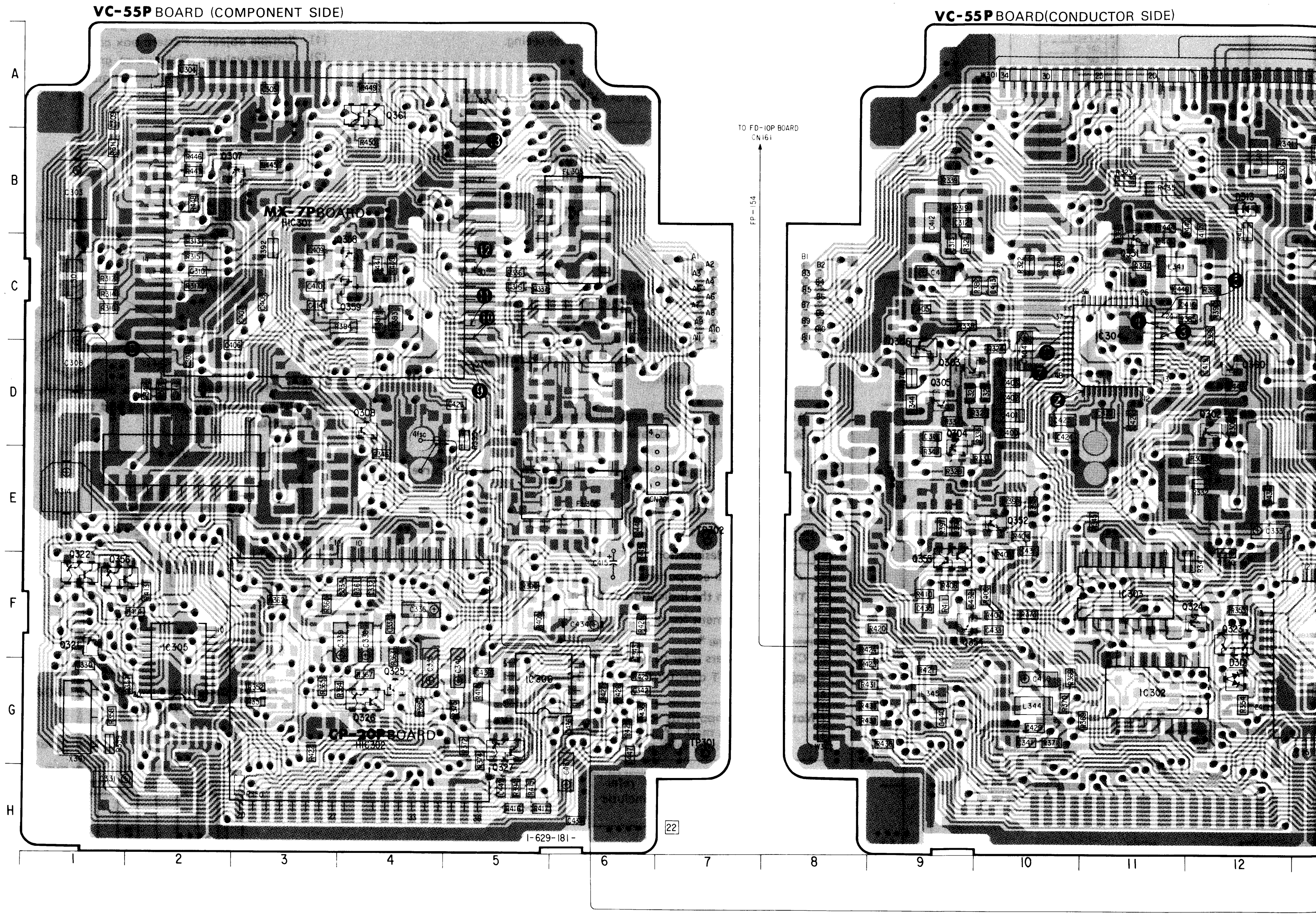
IC200 ⑲ CAM REC

❻


Q202 Ⓢ CAM REC

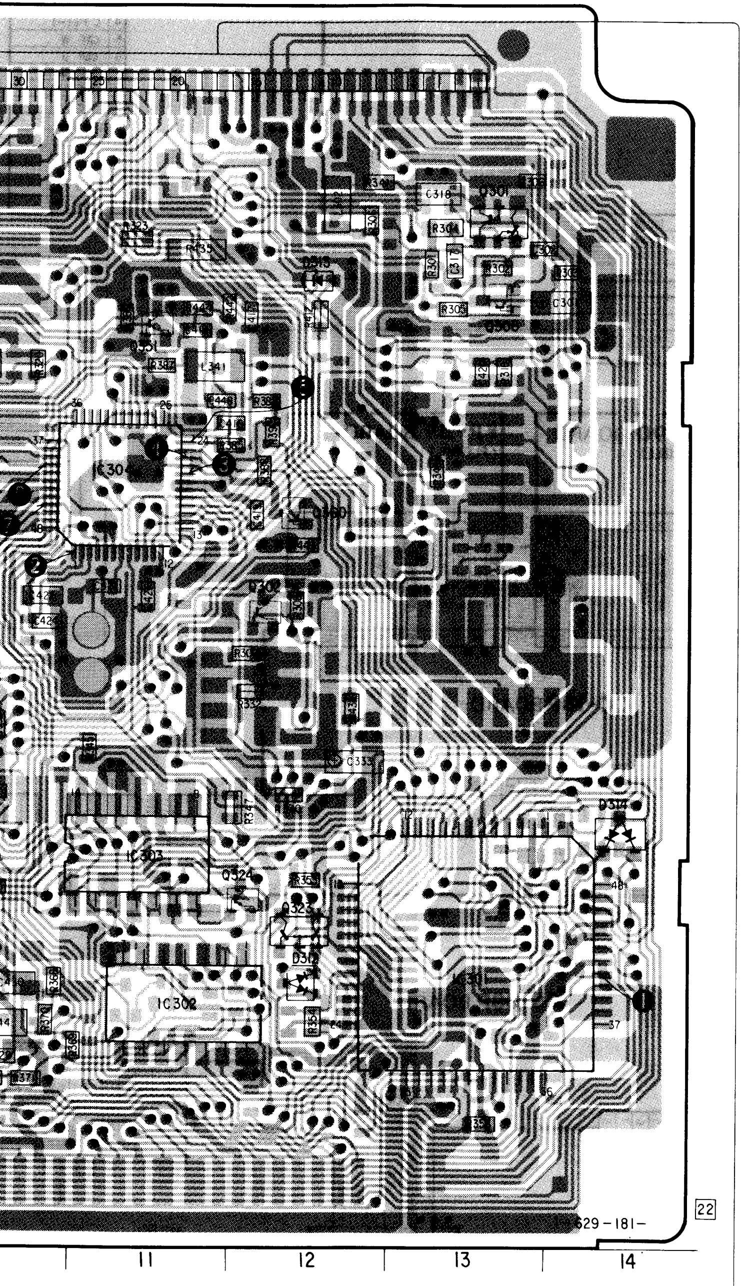
CD-13P (CCD IMAGER), VC-54P (SYNC GEN., TIMING GEN.), VC-55P (CAMERA PROCESS, AUTO WHITE BALANCE, ENCODER) PRINTED WIRING BOARDS

—Ref. No. VC-54P BOARD: 2000 series, CD-13P and VC-55P BOARDS: 4000 series—


VC-55P BOARD (COMPONENT SIDE)

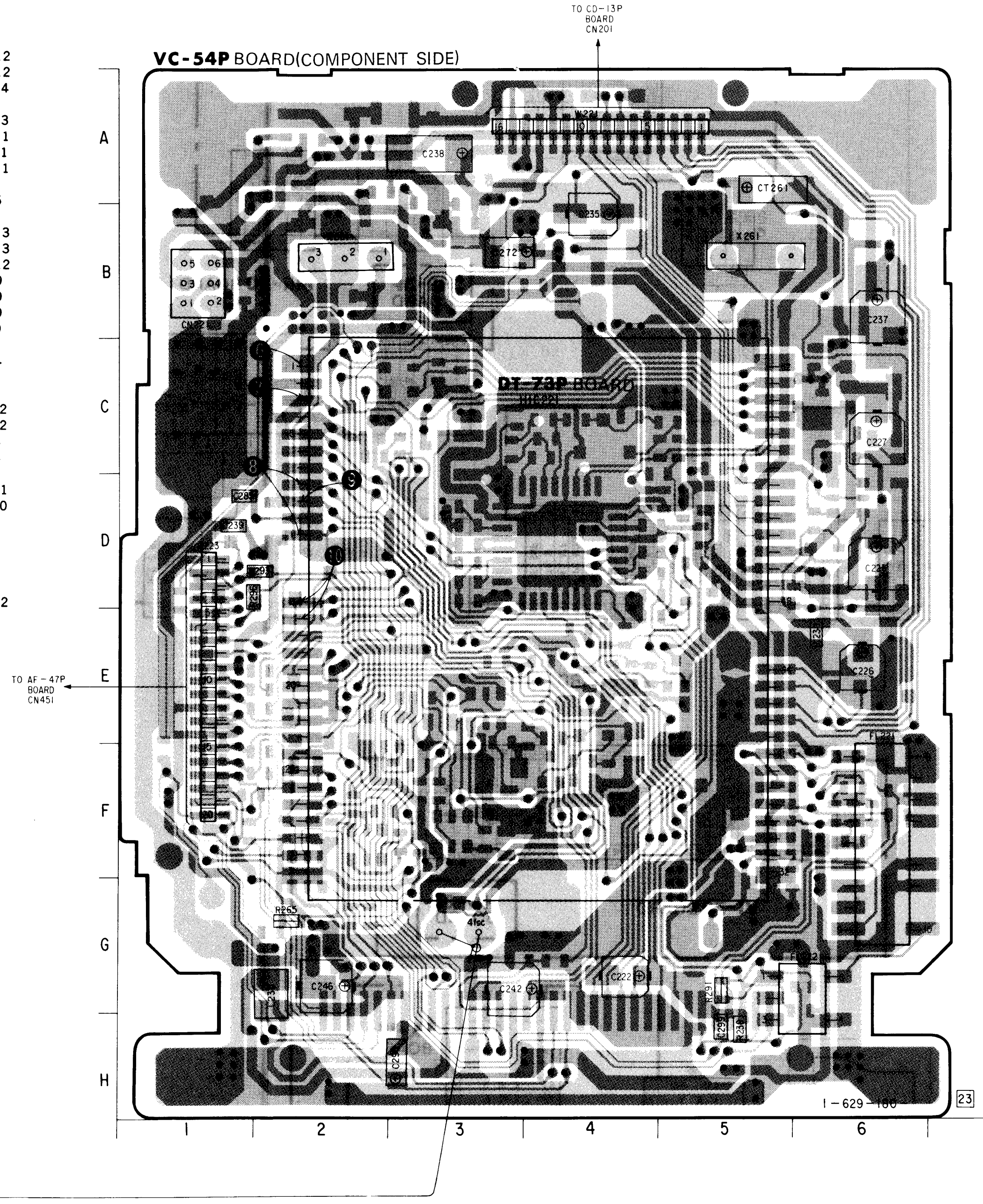
VC-55P BOARD (CONDUCTOR SIDE)
A
B
C
D
E
F
G
H
1
2
3
4
5
6
7
8
9
10
11
12
MX-7P BOARD
CP-20P BOARD
TO FD-10P BOARD CN161
FP-54
IC305
IC306
IC302
IC304
IC303
1-629-181-
22

D(CONDUCTOR SIDE)

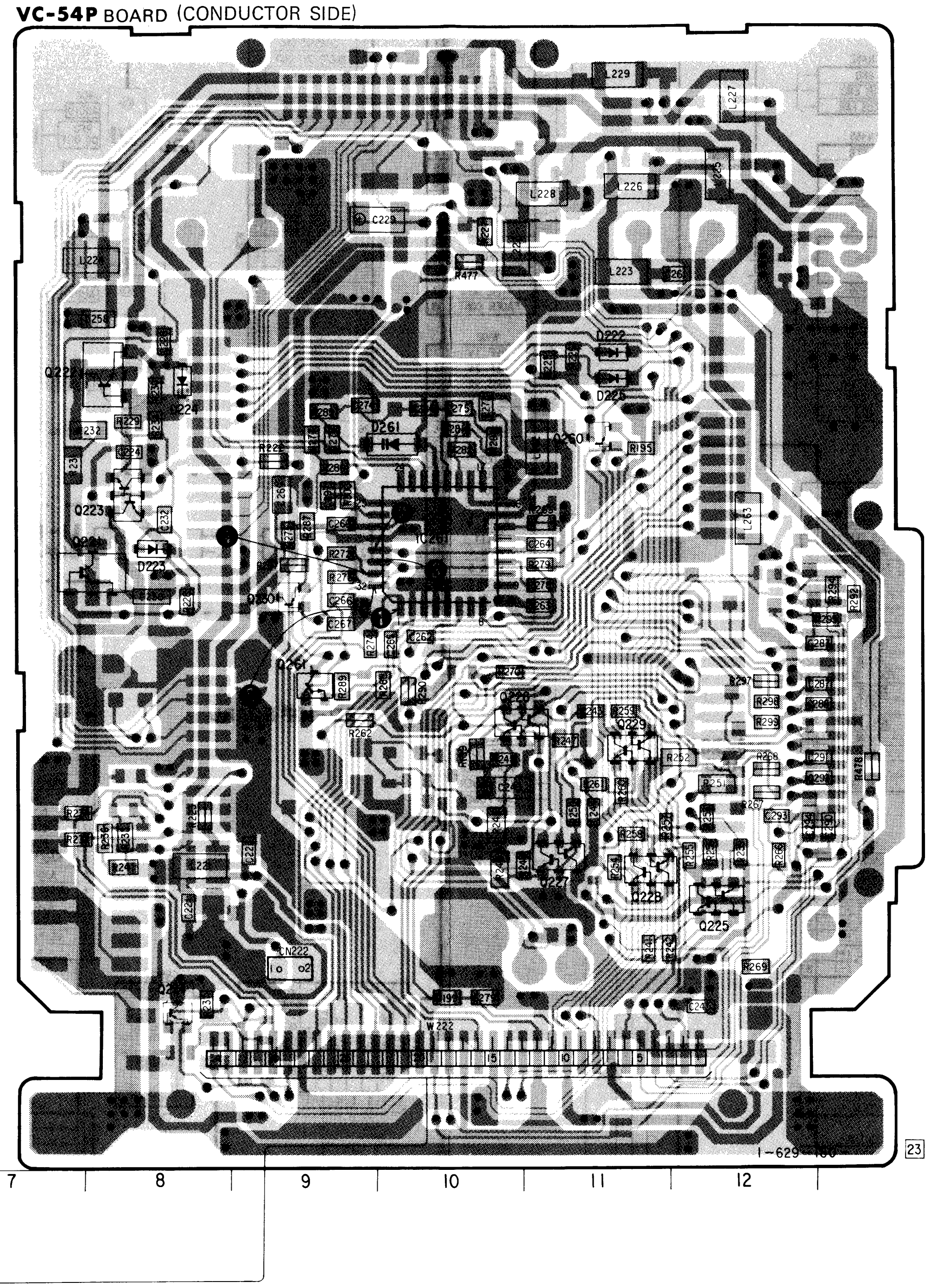

1-629-181-
22
11
12
13
14

D312	G-12
D313	B-12
D314	F-14
IC301	F-13
IC302	G-11
IC303	F-11
IC304	C-11
IC305	F-2
IC306	G-5
Q300	B-13
Q301	B-13
Q302	D-12
Q303	D-9
Q304	D-9
Q305	D-9
Q306	C-9
Q307	B-1
Q308	D-4
Q321	F-1
Q322	F-1
Q323	F-12
Q324	F-12
Q325	G-4
Q326	G-4
Q327	G-5
Q351	B-11
Q352	E-10
Q354	F-9
Q355	F-9
Q356	F-1
Q358	C-4
Q359	C-4
Q360	D-12
Q361	A-4

VC-54P BOARD(COMPONENT SIDE)


TO CD-13P BOARD CN201
TO AF-47P BOARD CN451
DT-73P BOARD
A
B
C
D
E
F
G
H
1
2
3
4
5
6
7
1-629-180-
23

VC-54P BOARD (CONDUCTOR SIDE)

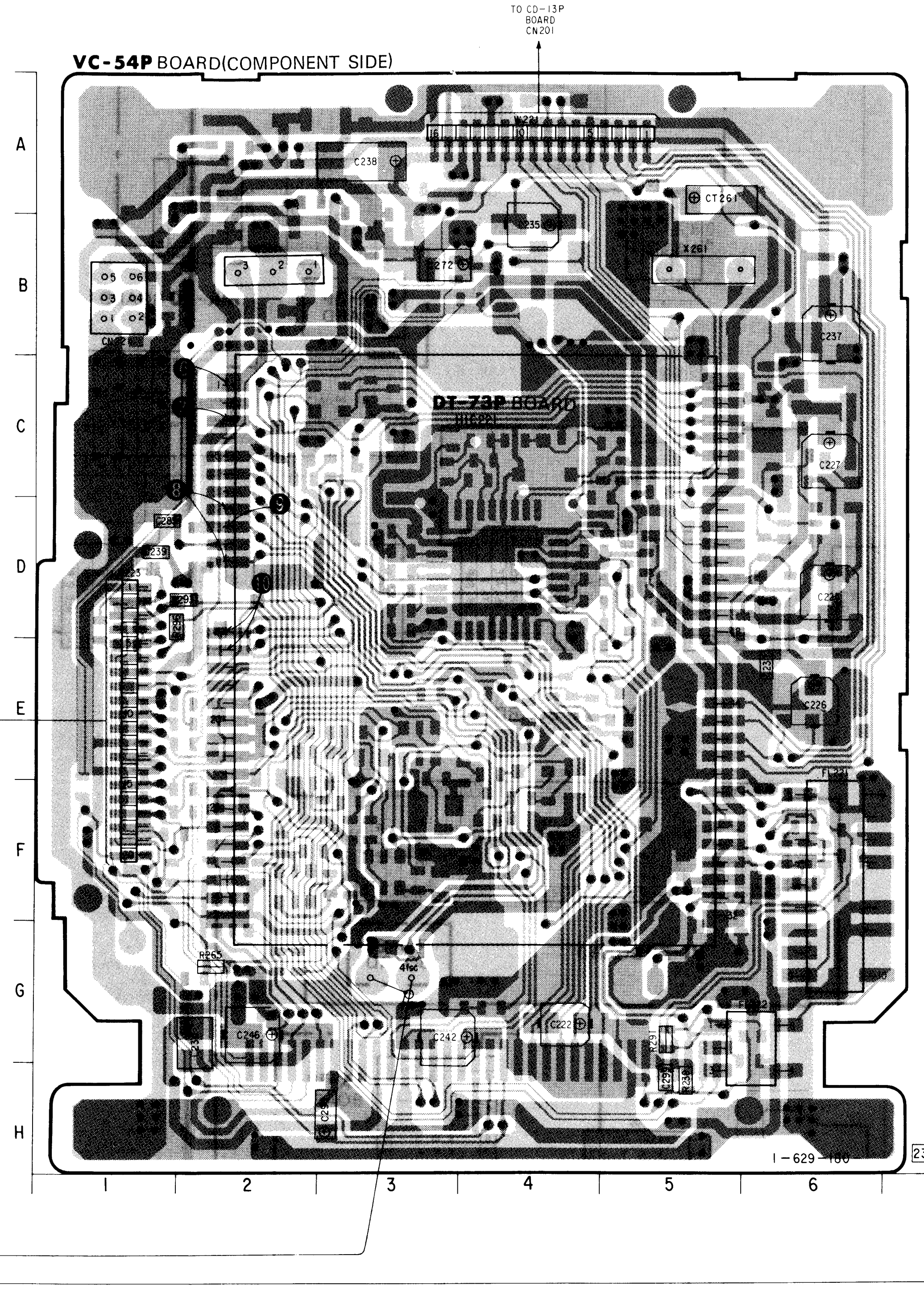

8
9
10
11
12
1-629-180-
23

D222	C-11
D223	D-8
D224	C-8
D225	C-11
IC261	D-10
Q221	D-8
Q222	C-8
Q223	D-8
Q224	G-8
Q225	F-12
Q226	E-10
Q227	F-11
Q228	F-11
Q229	E-11
Q230	D-9
Q260	C-11

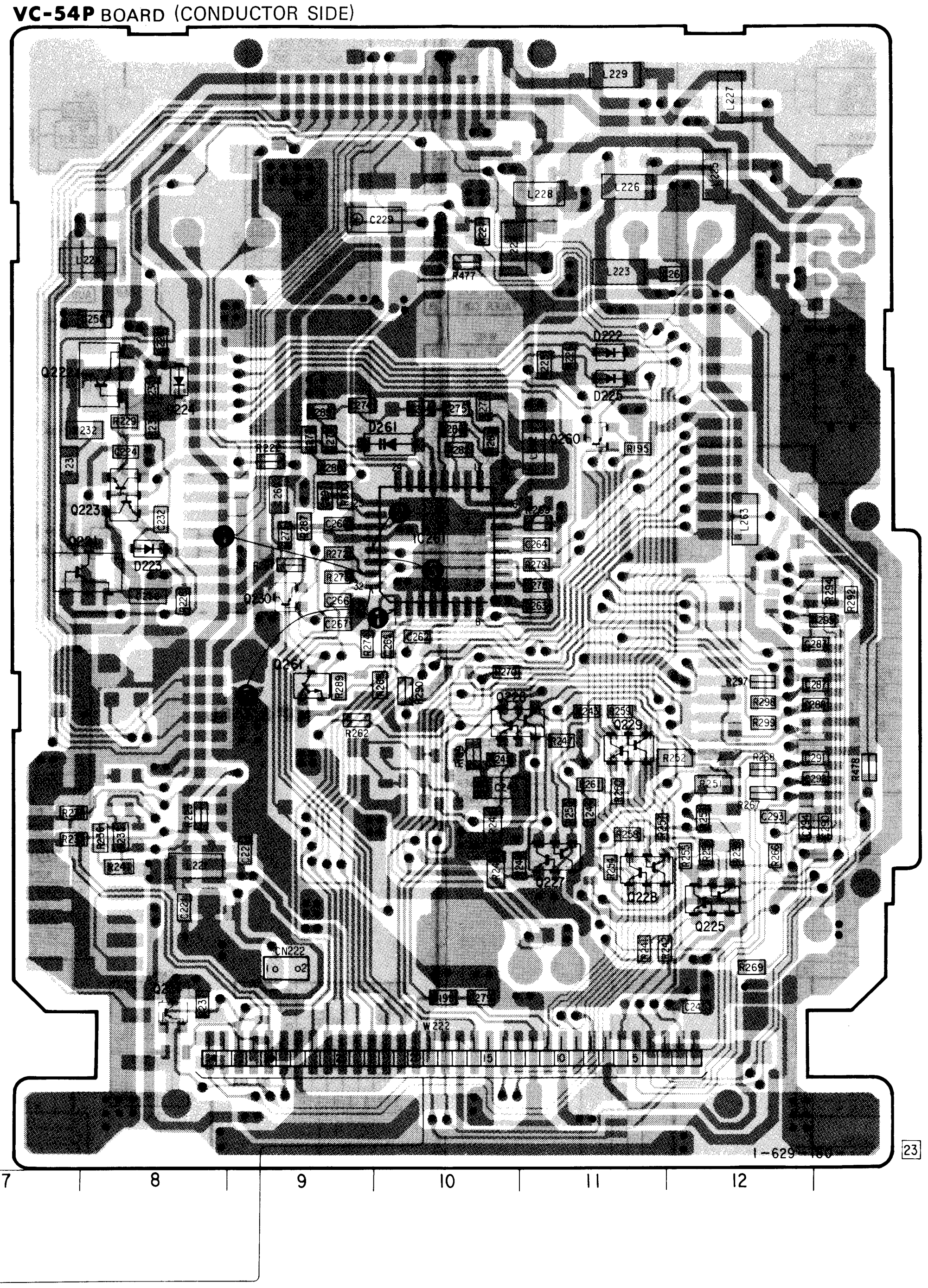
TO SS-88P BOARD W005

Be sure to always read "Precautions for replacement of CCD imager block" in page 81 when replacing the CD-13P board, complete, DT-73P board, complete and CCD imager block (IC200 on the CD-13P board and IC005 on the DT-73P board).

VC-54P BOARD(COMPONENT SIDE)

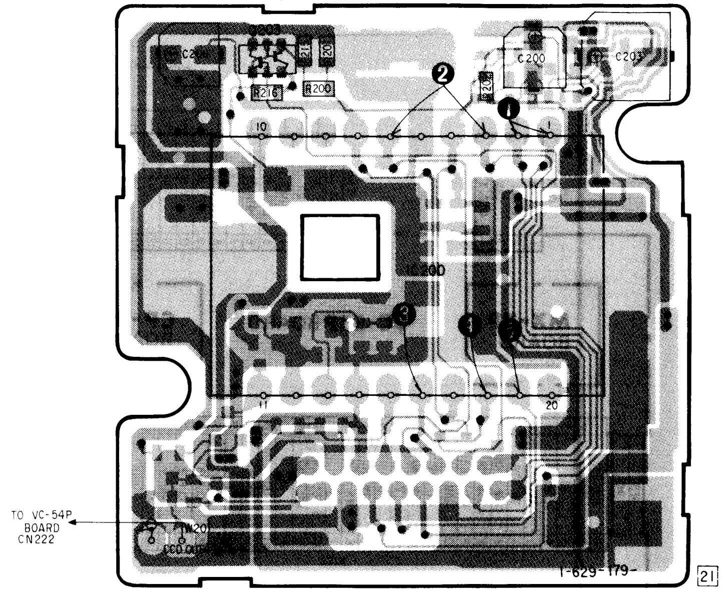

TO CD-13P BOARD CN201
A
B
C
D
E
F
G
H
DT-73P BOARD
C238
CT261
X261
C237
C227
C226
C242
C246
C222
R265
1
2
3
4
5
6
1-629-180
23

VC-54P BOARD (CONDUCTOR SIDE)

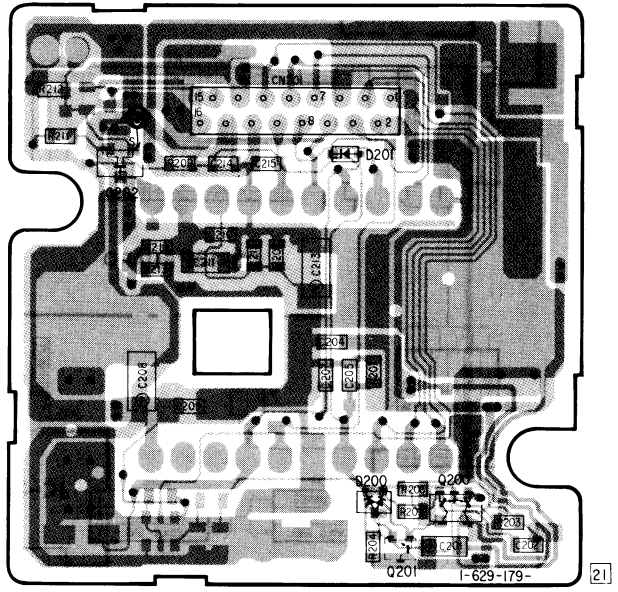

7
8
9
10
11
12
L229
L227
L228
L226
L225
R477
D222
D225
D261
IC261
Q221
Q222
Q223
Q224
Q225
Q226
Q227
Q228
Q229
Q230
Q260
D223
CN222
1-629-180
23

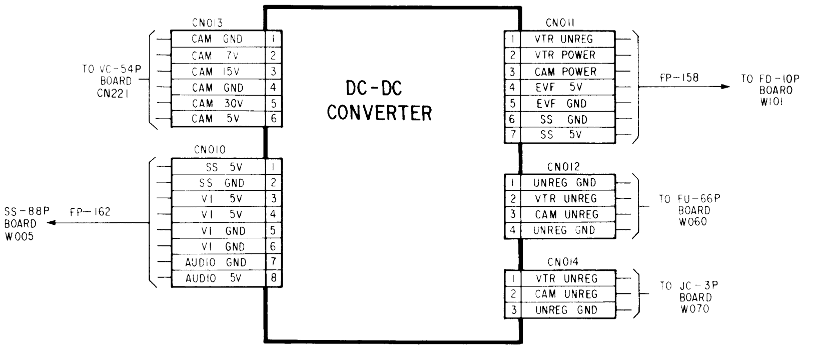
D222	C-11
D223	D-8
D224	C-8
D225	C-11
IC261	D-10
Q221	D-8
Q222	C-8
Q223	D-8
Q224	G-8
Q225	F-12
Q226	E-10
Q227	F-11
Q228	F-11
Q229	E-11
Q230	D-9
Q260	C-11

CD-13P BOARD(COMPONENT SIDE)


C200
C203
R200
IC200
TO VC-54P BOARD CN222
CN200
1-629-179-
21

CD-13P BOARD (CONDUCTOR SIDE)

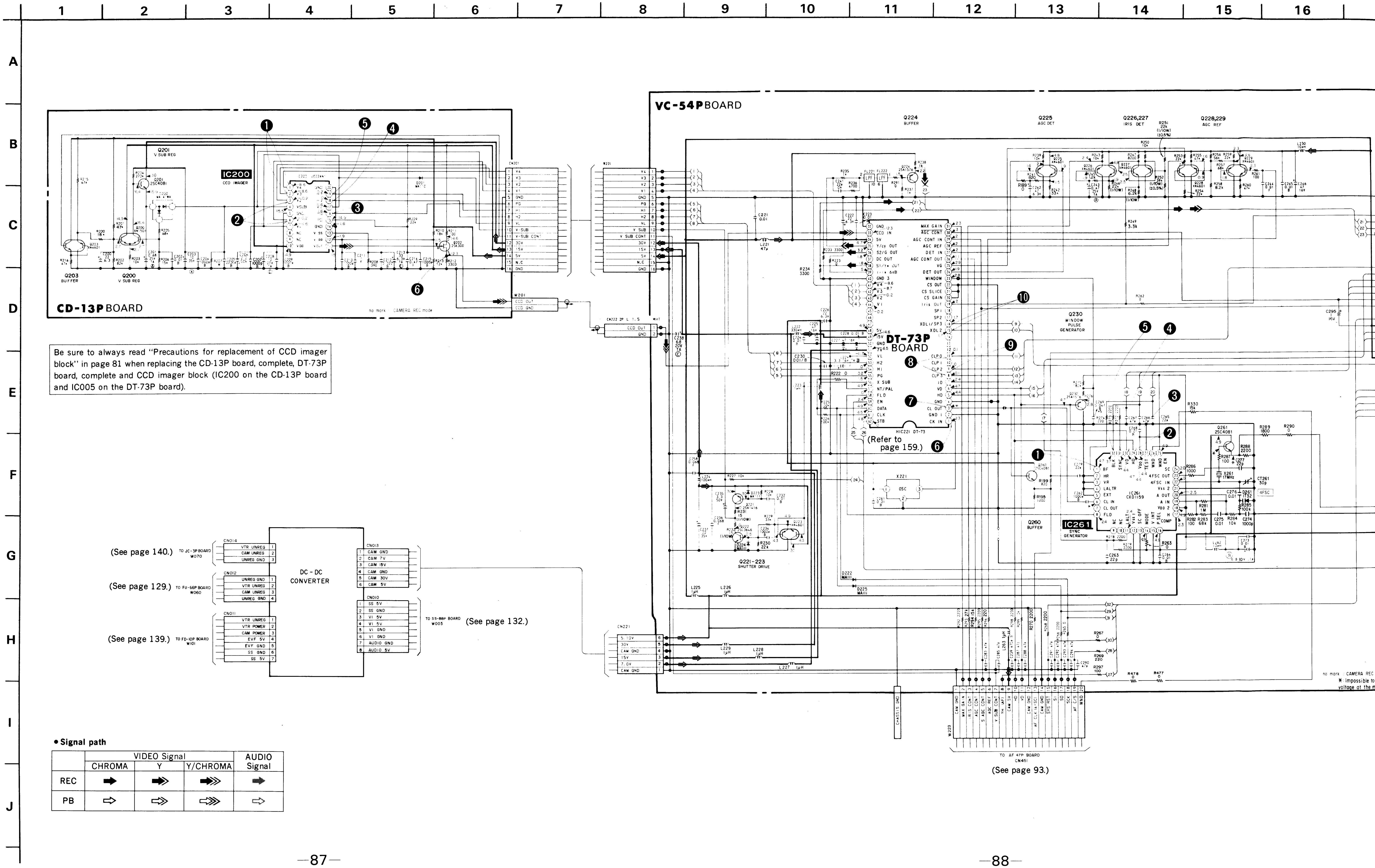

CN201
D201
Q200
Q201
1-629-179-
21


CN013
CAM GND 1
CAM 7V 2
CAM 15V 3
CAM GND 4
CAM 30V 5
CAM 5V 6
TO VC-54P BOARD CN221
CN010
SS 5V 1
SS GND 2
V1 5V 3
V1 5V 4
V1 GND 5
V1 GND 6
AUDIO GND 7
AUDIO 5V 8
TO SS-88P BOARD W005
FP-162
DC-DC CONVERTER
CN011
1 VTR UNREG
2 VTR POWER
3 CAM POWER
4 EVF 5V
5 EVF GND
6 SS GND
7 SS 5V
FP-158
TO FD-10P BOARO W101
CN012
1 UNREG GND
2 VTR UNREG
3 CAM UNREG
4 UNREG GND
TO FU-66P BOARD W060
CN014
1 VTR UNREG
2 CAM UNREG
3 UNREG GND
TO JC-3P BOARD W070

Be sure to always read "Precautions for replacement of CCD imager block" in page 81 when replacing the CD-13P board, complete, DT-73P board, complete and CCD imager block (IC200 on the CD-13P board and IC005 on the DT-73P board).

CD-13P (CCD IMAGER), VC-54P (SYNC GEN. , TIMING GEN.), VC-55P (CAMERA PROCESS, AUTO WHITE BALANCE, ENCODER) SCHEMATIC DIAGRAM

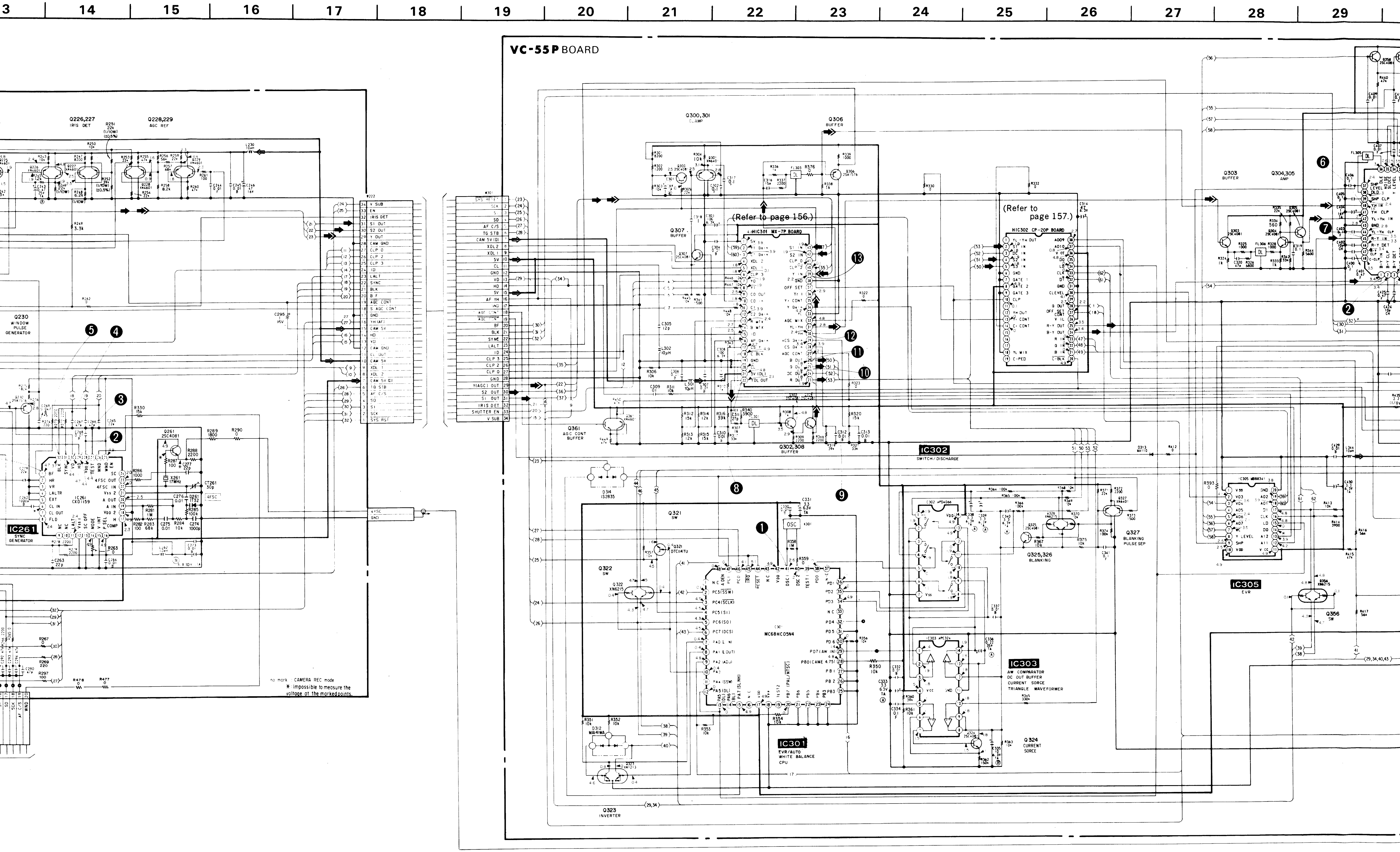
—Ref. No. VC-54P BOARD : 2000 series, CD-13P and VC-55P BOARDS : 4000 series—


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
CD-13P BOARD
IC200
CCD IMAGER
Q201
V SUB REG
Q203
BUFFER
Q200
V SUB REG
CN201
W201
CCD OUT
CCD GND
no mark : CAMERA REC mode
VC-54P BOARD
Q224
BUFFER
Q225
AGC DET
Q226,227
IRIS DET
Q228,229
AGC REF
DT-73P
BOARD
HIC221 DT-73
(Refer to page 159.)
Q230
WINDOW PULSE GENERATOR
Q260
BUFFER
IC261
SYNC GENERATOR
Q221-223
SHUTTER DRIVE
X221
OSC
DC - DC CONVERTER
CN014
CN012
CN011
CN013
CN010
(See page 140.)
TO JC-3P BOARD W070
(See page 129.)
TO FU-66P BOARD W060
(See page 139.)
TO FD-10P BOARD W101
TO SS-88P BOARD W005
(See page 132.)
CN221
W223
TO AF-47P BOARD CN451
(See page 93.)
no mark : CAMERA REC
※ : Impossible to
voltage at the m

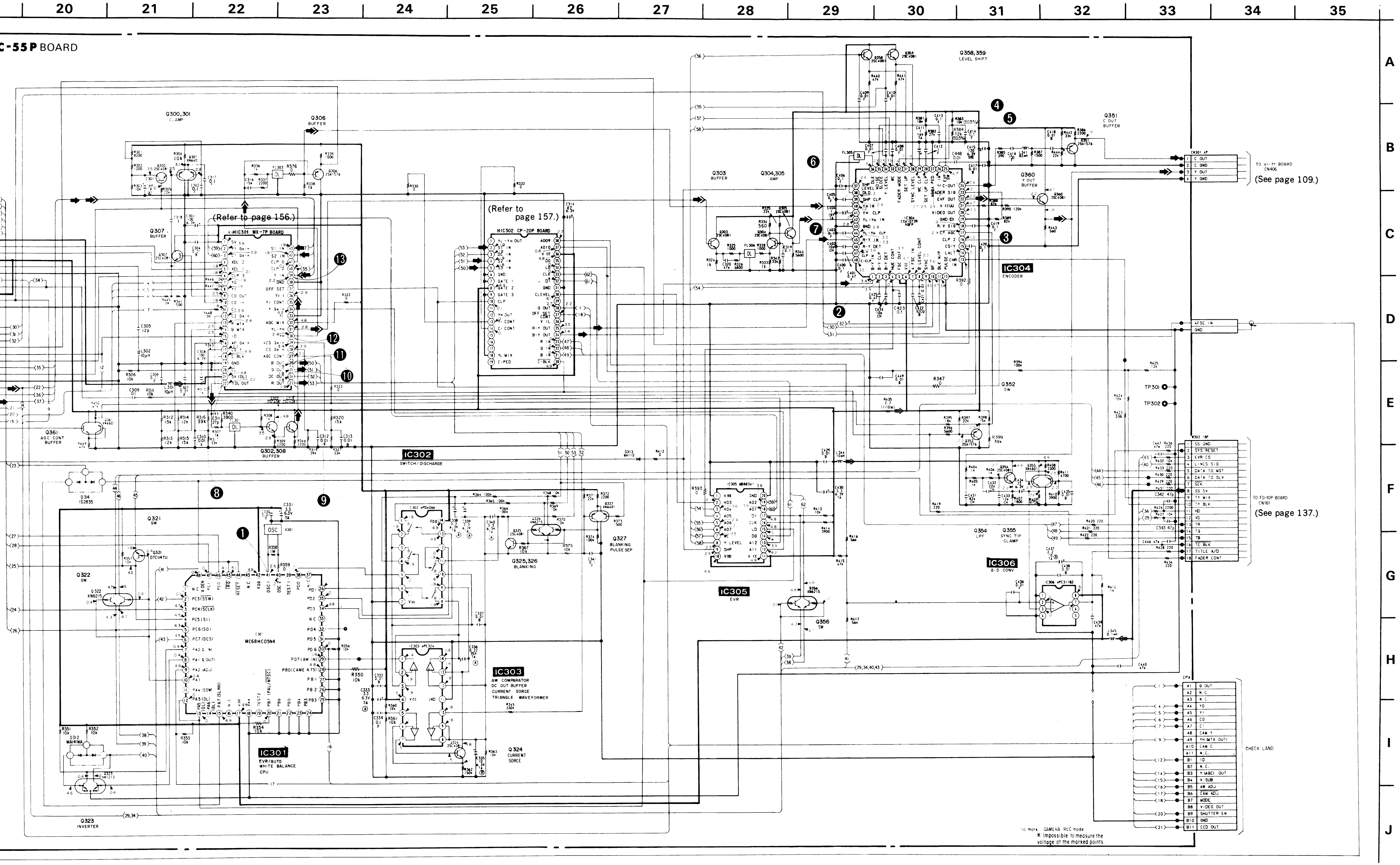
Be sure to always read "Precautions for replacement of CCD imager block" in page 81 when replacing the CD-13P board, complete, DT-73P board, complete and CCD imager block (IC200 on the CD-13P board and IC005 on the DT-73P board).

• Signal path

	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	➡
PB	⇨	⇨⇨	⇨⇨⇨	⇨

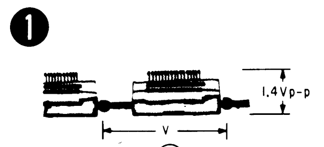

13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
VC-55P BOARD
Q226,227
IRIS DET
Q228,229
AGC REF
Q230
WINDOW
PULSE
GENERATOR
IC261
SYNC
GENERATOR
CXD1159
Q261
2SC4081
X261
17MHz
Q300,301
CLAMP
Q306
BUFFER
Q307
BUFFER
(Refer to page 156.)
HIC301 MX-7P BOARD
(Refer to
page 157.)
HIC302 CP-20P BOARD
Q303
BUFFER
Q304,305
AMP
Q361
AGC CONT
BUFFER
Q302,308
BUFFER
IC302
SWITCH/DISCHARGE
D314
1S2835
Q321
SW
Q321
DTC114TU
Q322
SW
Q322
XN6215
MC68HC05N4
IC301
EVR/AUTO
WHITE BALANCE
CPU
D312
MA141WA
Q323
INVERTER
Q325,326
BLANKING
Q327
BLANKING
PULSE SEP
IC303
AW COMPARATOR
DC OUT BUFFER
CURRENT SORCE
TRIANGLE WAVEFORMER
Q324
CURRENT
SORCE
CC305 MB88341
IC305
EVR
Q356
SW
OSC
DL
4FSC
CT261
30p

no mark : CAMERA REC mode
* Impossible to measure the voltage at the marked points.


20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
A
B
C
D
E
F
G
H
I
J
C-55P BOARD
Q300,301 CLAMP
Q306 BUFFER
Q307 BUFFER
(Refer to page 156.)
HIC301 MX-7P BOARD
(Refer to page 157.)
HIC302 CP-20P BOARD
Q361 AGC CONT BUFFER
Q302,308 BUFFER
IC302 SWITCH/DISCHARGE
D314 1S2835
Q321 SW
Q321 DTC114TU
Q322 SW
Q322 XN6215
OSC
MC68HC05N4
IC301 EVR/AUTO WHITE BALANCE CPU
Q323 INVERTER
D312 MA141WA
IC302 μPD4066
IC303 μPC324
IC303 AW COMPARATOR DC OUT BUFFER CURRENT SORCE TRIANGLE WAVEFORMER
Q324 CURRENT SORCE
Q325,326 BLANKING
Q327 BLANKING PULSE SEP
Q358,359 LEVEL SHIFT
Q303 BUFFER
Q304,305 AMP
IC304 ENCODER
Q351 C OUT BUFFER
Q360 Y OUT BUFFER
CN301 4P
TO VI-71 BOARD CN406
(See page 109.)
C OUT
C GND
Y OUT
Y GND
4FSC IN
GND
TP301
TP302
Q352 SW
IC305 MB88341
IC305 EVR
Q356 SW
Q354 LPF
Q355 SYNC TIP CLAMP
IC306 A-D CONV
IC306 μPC3118Z
CN302 18P
SS GND
SYS RESET
EVR CS
LINES SIG
DATA TO MST
DATA TO SLV
SCK
SS 5V
TY MIX
TY BLK
HD
VD
TR
TG
TB
TC BLK
TITLE A/D
FADER CONT
TO FD-10P BOARD CN161
(See page 137.)
CPA
A1 G OUT
A2 N.C.
A3 N.C.
A4 Y0
A5 Y1
A6 C0
A7 C1
A8 CAM Y
A9 YH MTX OUT
A10 CAM C
A11 N.C.
B1 ID
B2 N.C.
B3 Y (AGC) OUT
B4 V SUB
B5 AW ADJ
B6 CAM ADJ
B7 MODE
B8 VIDEO OUT
B9 SHUTTER EN
B10 GND
B11 CCD OUT
CHECK LAND
no mark : CAMERA REC mode
* Impossible to measure the voltage of the marked points.

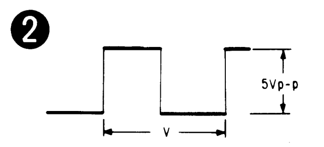
AF-47P BOARD

❶



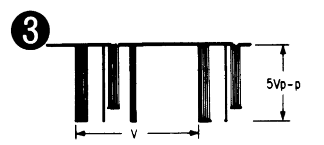
IC451 ⑤

❷



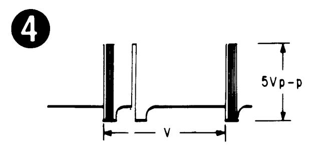
IC451 ⑧

❸



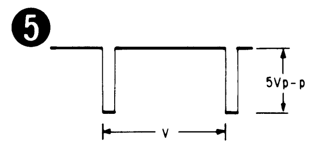
IC451 ⑭

❹



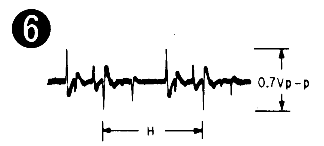
IC451 ⑮

❺



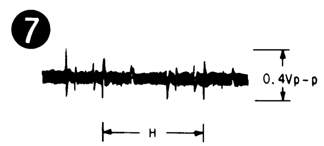
IC451 ⑯

❻



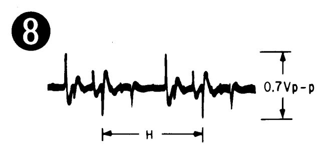
IC451 ㊷

❼



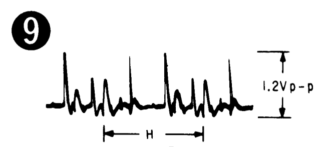
IC451 ㊹

❽



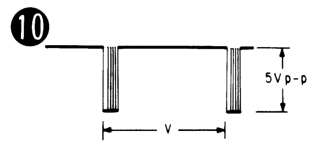
IC451 ㊺

❾



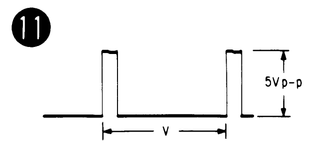
IC451 ㊻

❿



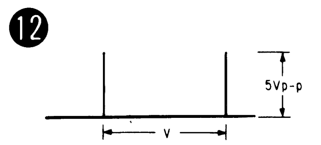
IC452 ①

⓫



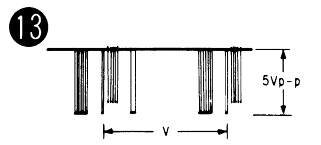
IC452 ㉛

⓬



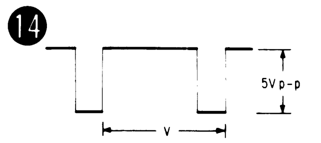
IC452 ㉝

⓭



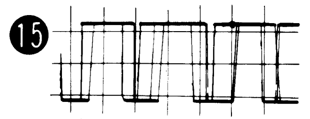
IC452 ㊸

⓮



IC452 ㊽

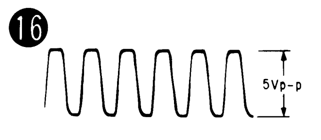
⓯



V.2V/div H.1msec/div.
(During the focus motor rotating)

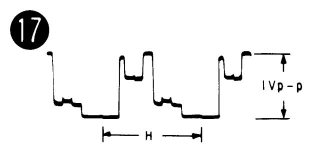
IC452 (51)

⓰



IC452 (52)

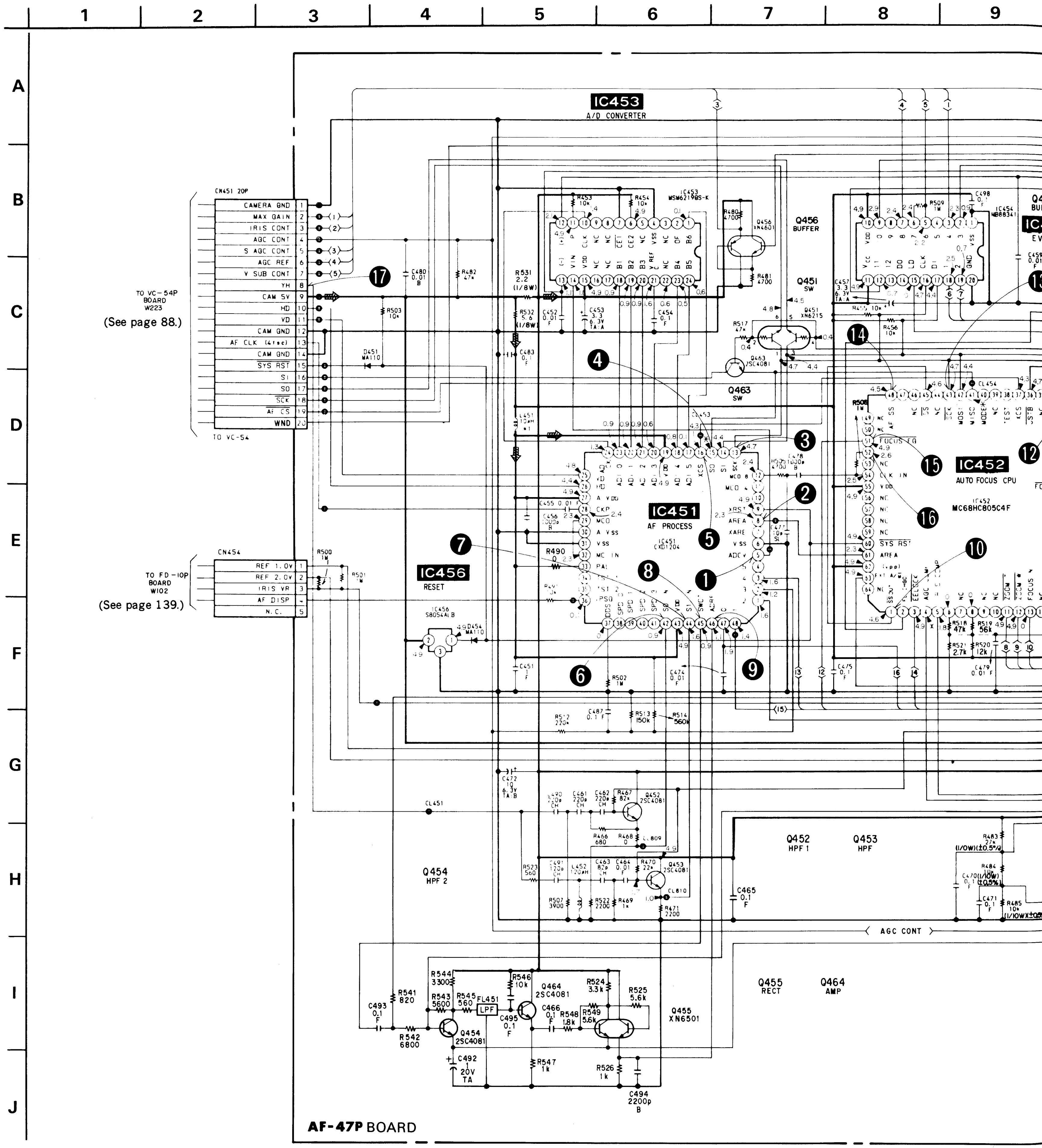
⓱



CN451 ⑧

AF-47P (AUTO FOCUS), DM-23P (FOCUS/IRIS/ZOOM MOTOR DRIVE) SCHEMATIC DIAGRAM

—Ref. No. DM-23P BOARD : 2000 series, AF-47P BOARD : 5000 series—


1
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7
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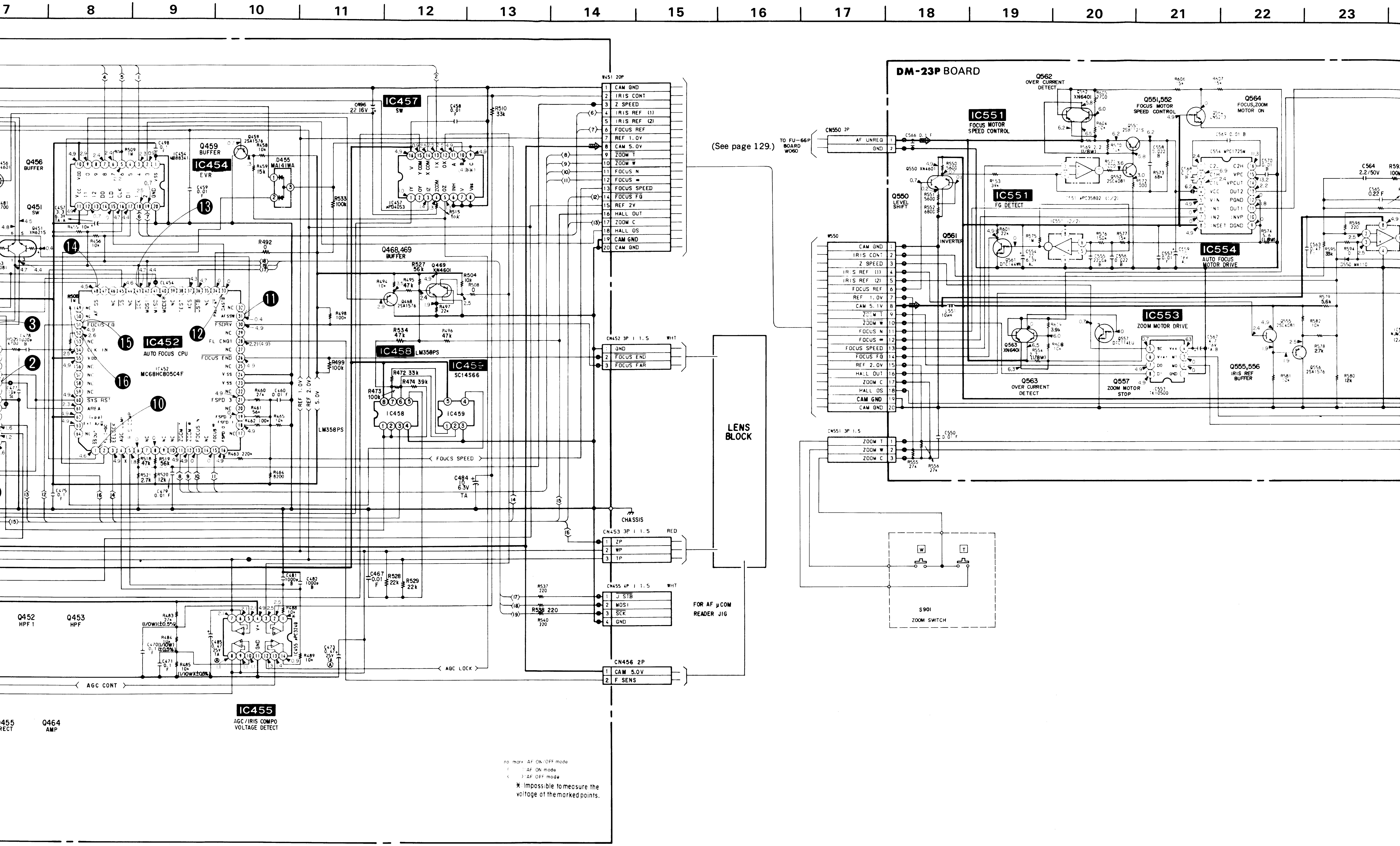
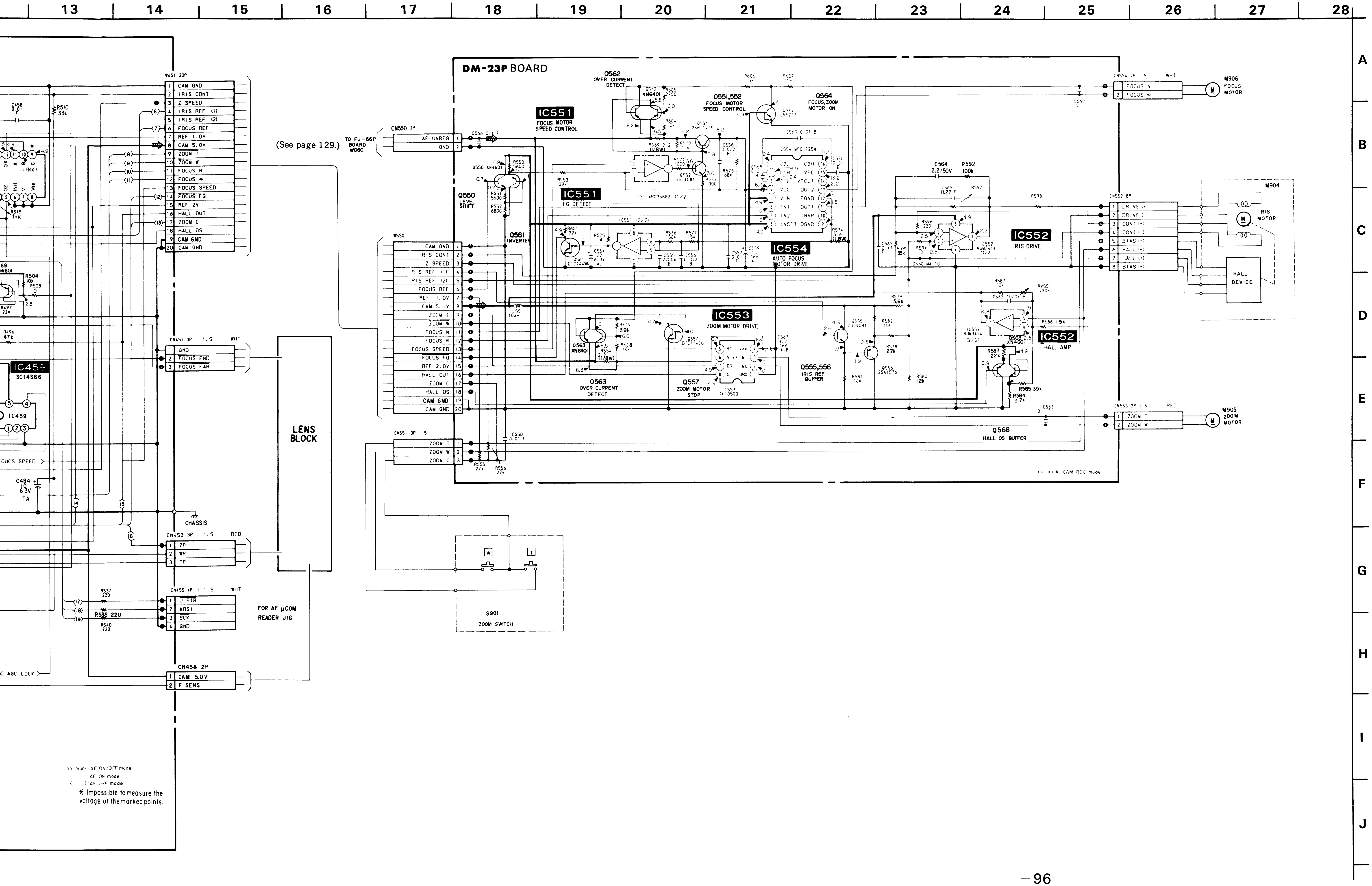
9
A
B
C
D
E
F
G
H
I
J
IC453
A/D CONVERTER
IC453 MSM6219BS-K
CN451 20P
CAMERA GND
MAX GAIN
IRIS CONT
AGC CONT
S AGC CONT
AGC REF
V SUB CONT
YH
CAM 5V
HD
VD
CAM GND
AF CLK (4fsc)
CAM GND
SYS RST
SI
SO
SCK
AF CS
WND
TO VC-54P BOARD W223
(See page 88.)
TO VC-54
CN454
REF 1.0V
REF 2.0V
IRIS VR
AF DISP
N.C.
TO FD-10P BOARD W102
(See page 139.)
Q456 BUFFER
Q456 XN4601
Q451 SW
Q451 XN6215
Q463 SW
Q463 2SC4081
IC451
AF PROCESS
IC451 CXD1204
IC452
AUTO FOCUS CPU
IC452 MC68HC805C4F
IC454 MB88341
IC456
RESET
IC456 S8054ALB
D451 MA110
D454 MA110
Q452 HPF 1
Q453 HPF
Q454 HPF 2
Q455 RECT
Q455 XN6501
Q464 AMP
Q464 2SC4081
Q454 2SC4081
Q452 2SC4081
Q453 2SC4081
FL451 LPF
CL451
AGC CONT
AF-47P BOARD


7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
IC457
SW
IC454
EVR
Q459
BUFFER
Q456
BUFFER
Q451
SW
D455
MA141WA
IC452
AUTO FOCUS CPU
MC68HC805C4F
Q468,469
BUFFER
IC458
LM358PS
IC459
SC14S66
LM358PS
IC455
AGC/IRIS COMPO
VOLTAGE DETECT
Q452
HPF 1
Q453
HPF
Q455
Q464
AMP
AGC CONT
AGC LOCK
FOUCS SPEED
REF 1.0V
REF 2.0V
5.0V
CHASSIS
W451 20P
CAM GND
IRIS CONT
Z SPEED
IRIS REF (1)
IRIS REF (2)
FOCUS REF
REF 1.0V
CAM 5.0V
ZOOM T
ZOOM W
FOCUS N
FOCUS ∞
FOCUS SPEED
FOCUS FG
REF 2V
HALL OUT
ZOOM C
HALL OS
CAM GND
CAM GND
CN452 3P 1 1.5 WHT
GND
FOCUS END
FOCUS FAR
CN453 3P 1 1.5 RED
ZP
WP
TP
CN455 4P 1 1.5 WHT
J STB
MOSI
SCK
GND
FOR AF μCOM
READER JIG
CN456 2P
CAM 5.0V
F SENS
LENS
BLOCK
(See page 129.)
TO FU-66P
BOARD
W060
CN550 2P
AF UNREG
GND
DM-23P BOARD
Q562
OVER CURRENT
DETECT
IC551
FOCUS MOTOR
SPEED CONTROL
Q551,552
FOCUS MOTOR
SPEED CONTROL
Q564
FOCUS,ZOOM
MOTOR ON
Q550
LEVEL
SHIFT
IC551
FG DETECT
Q561
INVERTER
IC554
AUTO FOCUS
MOTOR DRIVE
W550
CAM GND
IRIS CONT
Z SPEED
IRIS REF (1)
IRIS REF (2)
FOCUS REF
REF 1.0V
CAM 5.1V
ZOOM T
ZOOM W
FOCUS N
FOCUS ∞
FOCUS SPEED
FOCUS FG
REF 2.0V
HALL OUT
ZOOM C
HALL OS
CAM GND
CAM GND
IC553
ZOOM MOTOR DRIVE
Q563
OVER CURRENT
DETECT
Q557
ZOOM MOTOR
STOP
Q555,556
IRIS REF
BUFFER
CN551 3P 1.5
ZOOM T
ZOOM W
ZOOM C
S901
ZOOM SWITCH
W
T

no mark: AF ON/OFF mode
( ): AF ON mode
( ): AF OFF mode
✱: Impossible to measure the voltage at the marked points.



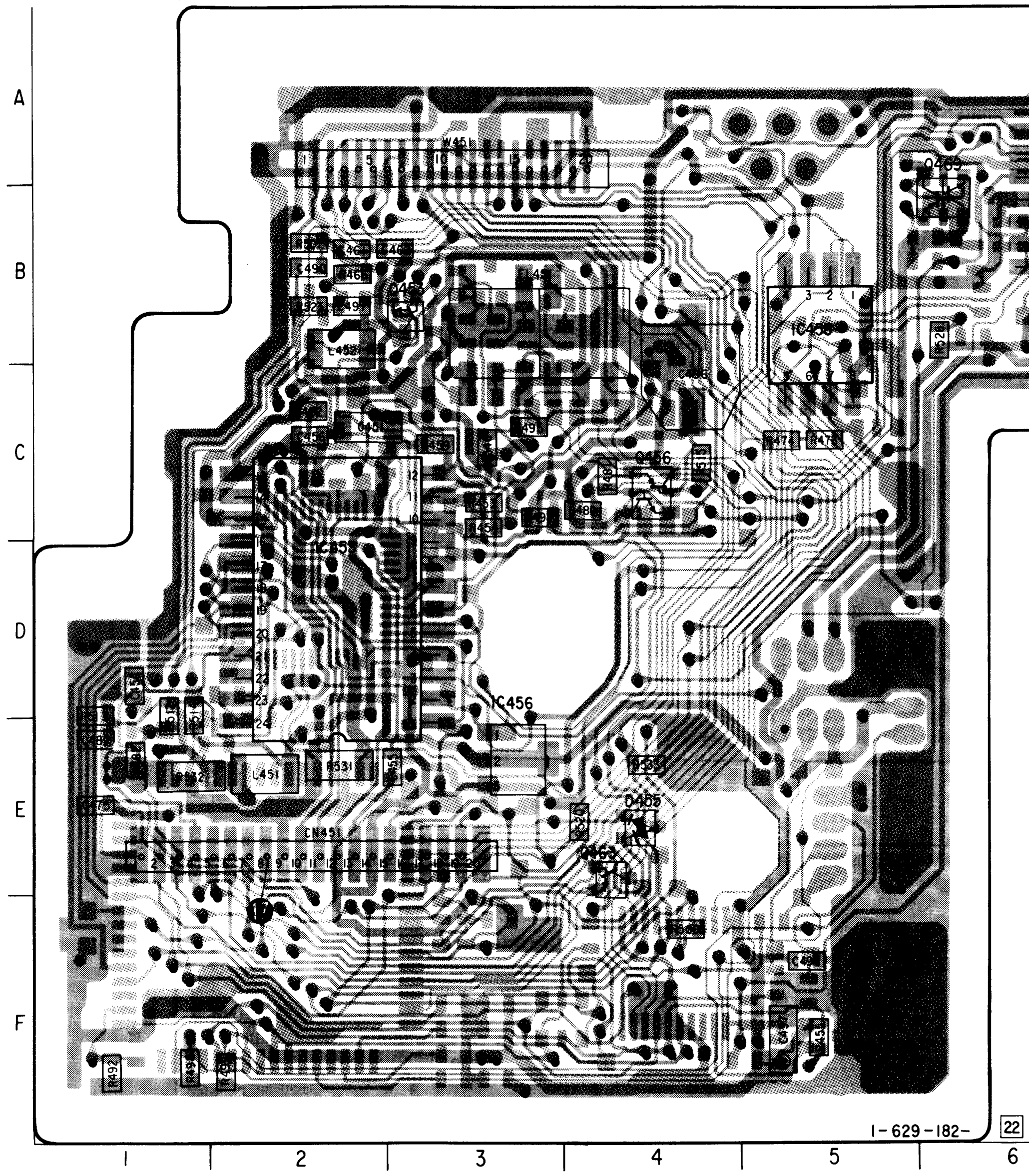
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
A
B
C
D
E
F
G
H
I
J
DM-23P BOARD
IC551
FOCUS MOTOR SPEED CONTROL
IC551
FG DETECT
IC552
IRIS DRIVE
IC552
HALL AMP
IC553
ZOOM MOTOR DRIVE
IC554
AUTO FOCUS MOTOR DRIVE
IC459
SC14S66
Q562
OVER CURRENT DETECT
Q551,552
FOCUS MOTOR SPEED CONTROL
Q564
FOCUS,ZOOM MOTOR ON
Q550
LEVEL SHIFT
Q561
INVERTER
Q563
OVER CURRENT DETECT
Q557
ZOOM MOTOR STOP
Q555,556
IRIS REF BUFFER
Q568
HALL OS BUFFER
M906
FOCUS MOTOR
M904
IRIS MOTOR
HALL DEVICE
M905
ZOOM MOTOR
LENS BLOCK
S901
ZOOM SWITCH
W
T
(See page 129.)
TO FU-66P BOARD W060
CN550 2P
AF UNREG
GND
CN451 20P
CN550
CAM GND
IRIS CONT
Z SPEED
IRIS REF (1)
IRIS REF (2)
FOCUS REF
REF 1.0V
CAM 5.0V
ZOOM T
ZOOM W
FOCUS N
FOCUS ∞
FOCUS SPEED
FOCUS FG
REF 2V
HALL OUT
ZOOM C
HALL OS
CAM GND
CAM GND
CN452 3P
GND
FOCUS END
FOCUS FAR
CN453 3P
ZP
WP
TP
CN455 4P
J STB
MOSI
SCK
GND
FOR AF μCOM READER JIG
CN456 2P
CAM 5.0V
F SENS
CN551 3P
ZOOM T
ZOOM W
ZOOM C
CN554 2P
FOCUS N
FOCUS ∞
CN552 8P
DRIVE (+)
DRIVE (−)
CONT (+)
CONT (−)
BIAS (+)
HALL (−)
HALL (+)
BIAS (−)
CN553 2P
ZOOM T
ZOOM W
CHASSIS
OCUS SPEED
AGC LOCK
C484 10 6.3V TA
R510 33k
R504 10k
R515 10k
R496 47k
R497 22k
R537 220
R538 220
R540 220
C564 2.2/50V
R592 100k
R585 39k
R584 2.7k
R583 22k
R588 1.5k
R578 2.7k
R580 12k
R579 5.6k
R595 33k
R607 3.9k
no mark: CAM REC mode

no mark: AF ON/OFF mode
( ): AF ON mode
< >: AF OFF mode
✱: Impossible to measure the voltage at the marked points.

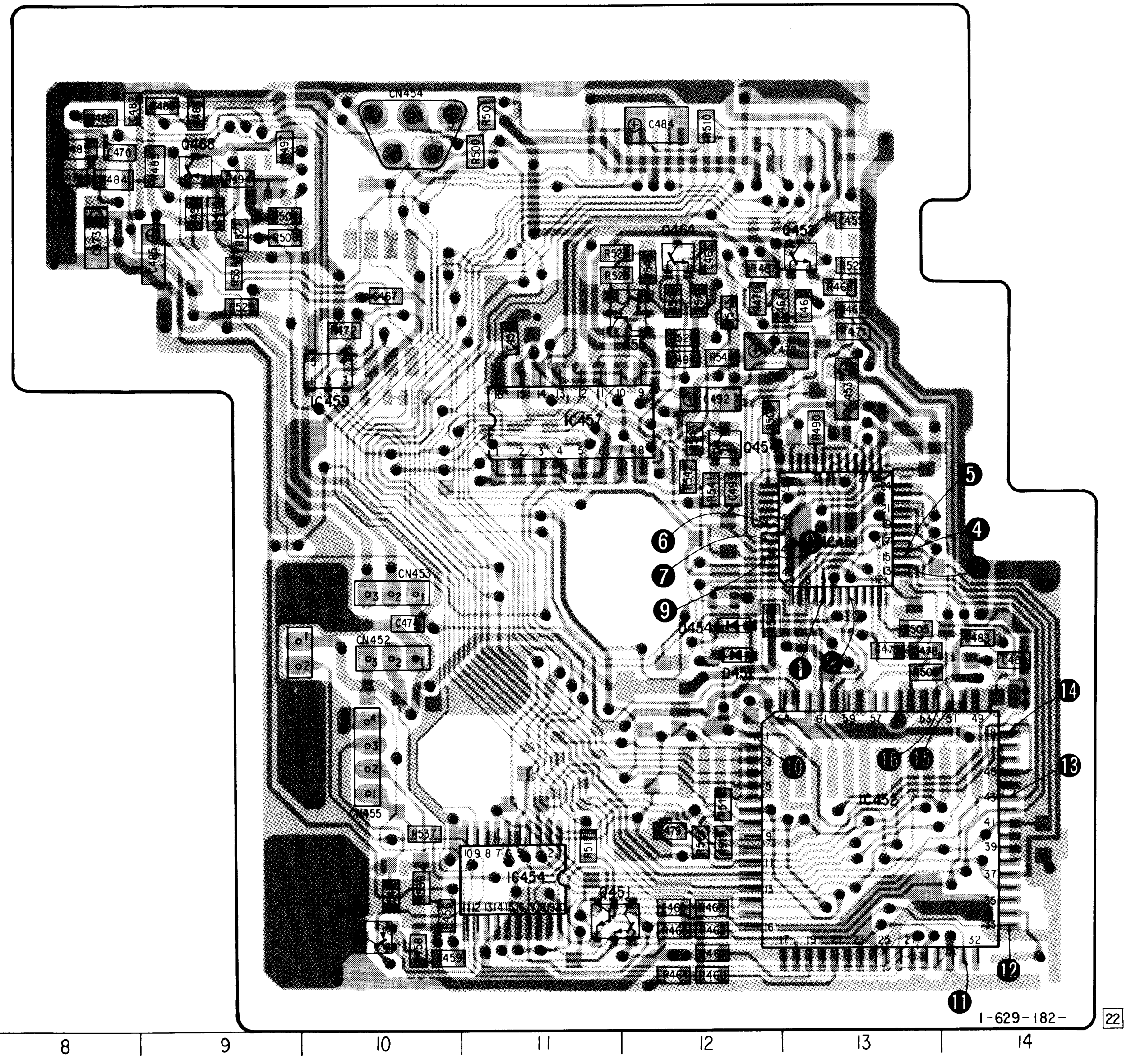
AF-47P (AUTO FOCUS), DM-23P (FOCUS/IRIS/ZOOM MOTOR DRIVE) PRINTED WIRING BOARDS

—Ref. No. DM-23P BOARD: 2000 series, AF-47P BOARD: 5000 series—

AF-47P BOARD (COMPONENT SIDE)

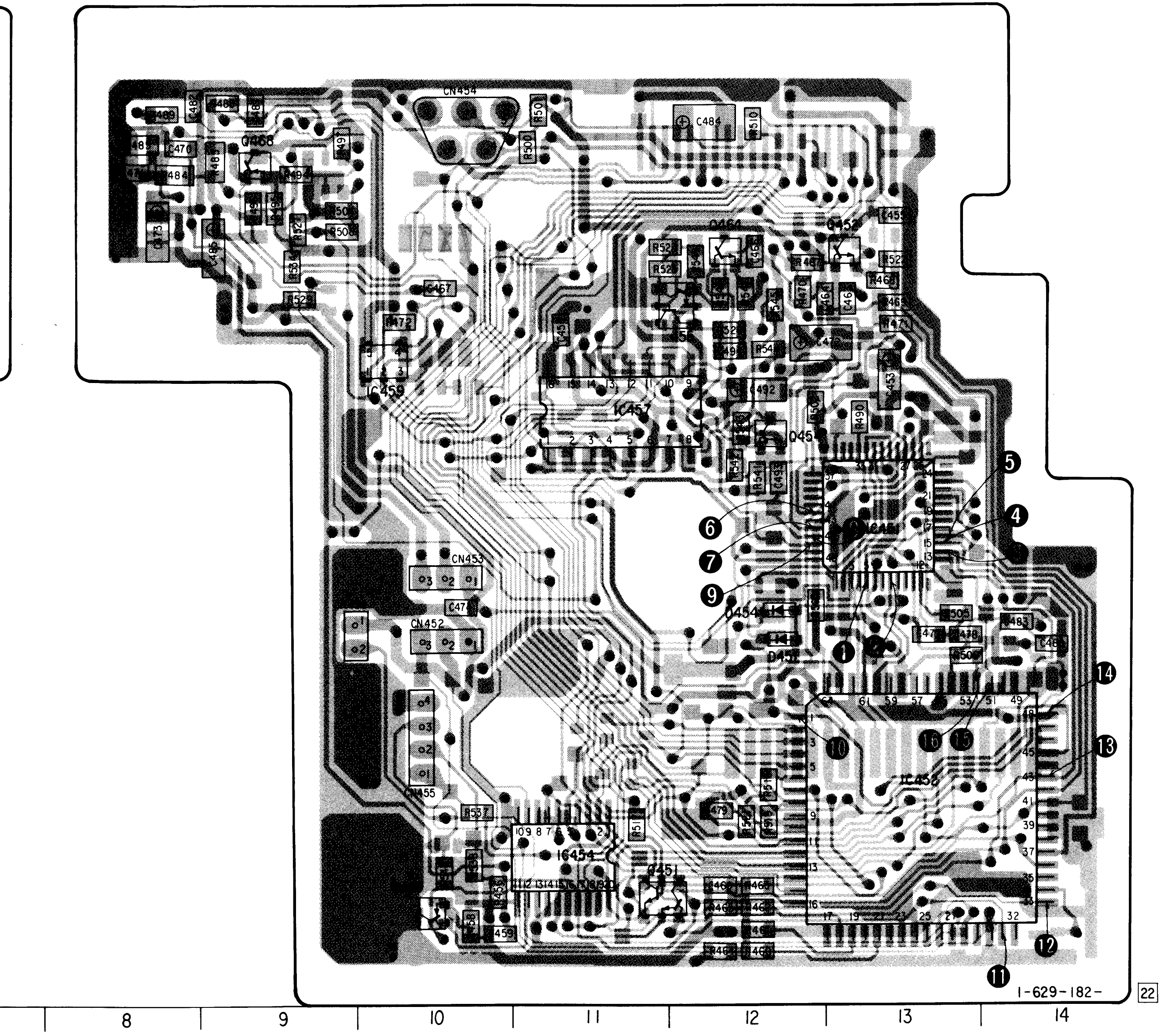

A
B
C
D
E
F
1
2
3
4
5
6
W451
IC455
IC458
IC453
IC456
Q469
Q453
Q456
Q463
D455
CN451
L451
L452
1-629-182-
22

AF-47P BOARD (CONDUCTOR SIDE)


9
10
11
12
13
14
CN454
CN453
CN452
CN455
IC451
IC452
IC454
IC457
IC459
Q451
Q452
Q454
Q455
Q459
Q464
Q468
D451
D454
1-629-182-
22

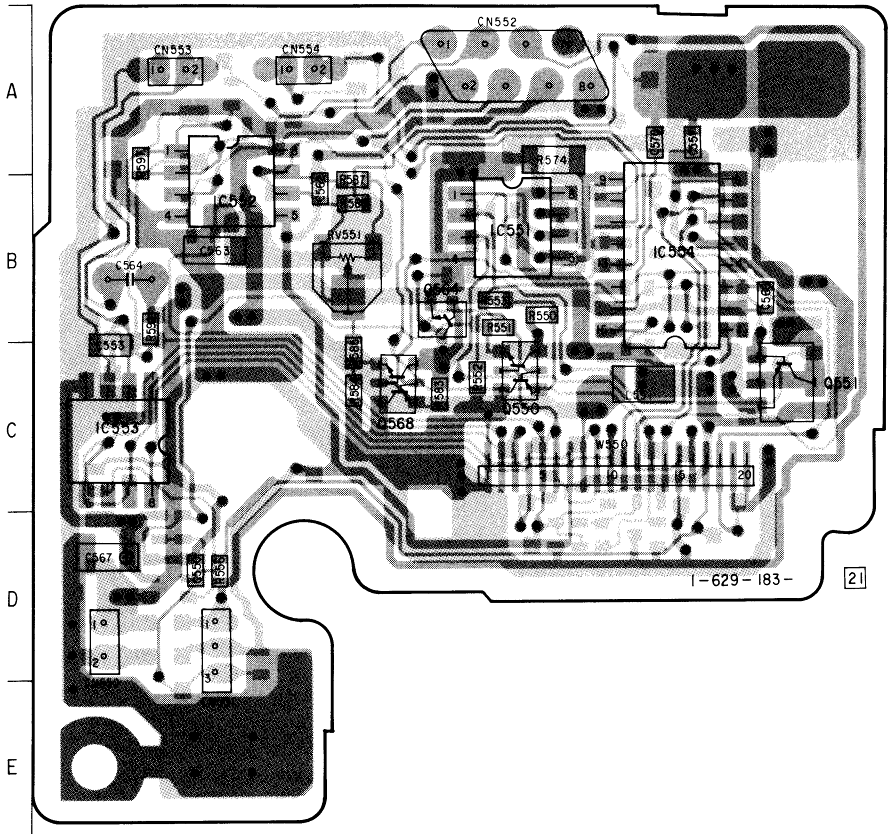
D451	E-12
D454	D-12
D455	E-4
IC451	D-13
IC452	F-13
IC453	D-2
IC454	F-11
IC455	B-6
IC456	E-3
IC457	C-11
IC458	B-5
IC459	C-10
Q451	F-11
Q452	B-13
Q453	B-3
Q454	C-12
Q455	B-12
Q456	C-4
Q459	F-10
Q463	E-4
Q464	B-12
Q468	B-9
Q469	B-6

AF-47P BOARD (CONDUCTOR SIDE)


CN454
CN453
CN452
IC457
IC458
IC459
IC454
Q451
Q452
Q454
Q464
Q468
D451
C484
1-629-182-
22
8
9
10
11
12
13
14

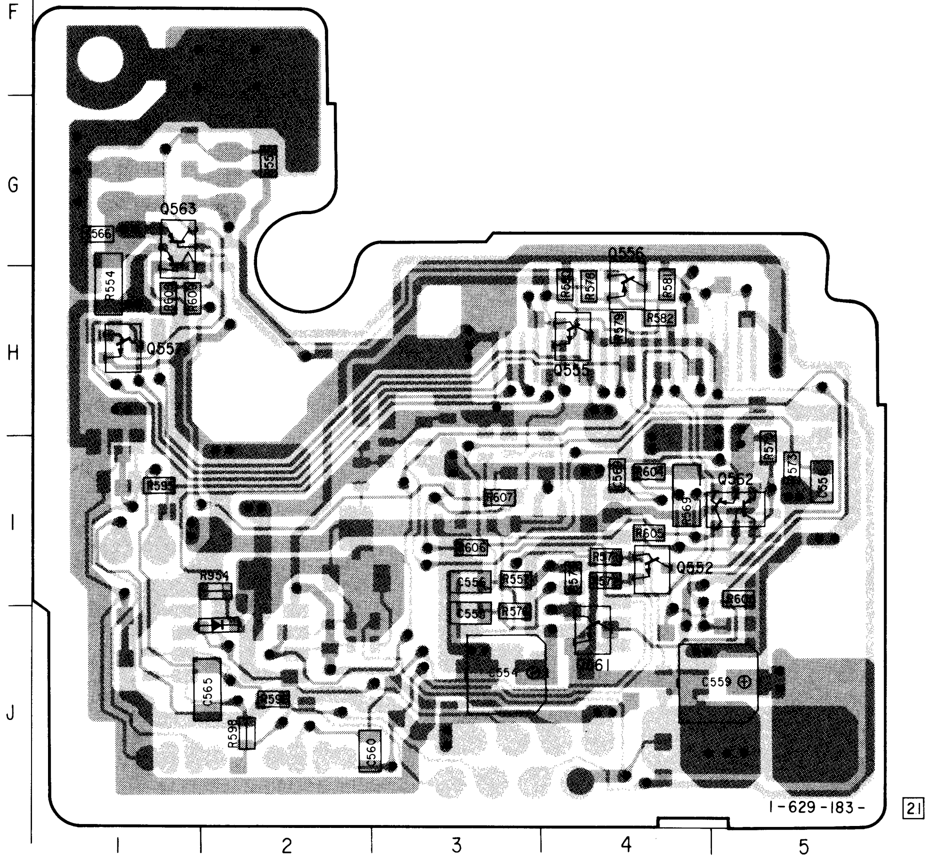
D451	E-12
D454	D-12
D455	E-4
IC451	D-13
IC452	F-13
IC453	D-2
IC454	F-11
IC455	B-6
IC456	E-3
IC457	C-11
IC458	B-5
IC459	C-10
Q451	F-11
Q452	B-13
Q453	B-3
Q454	C-12
Q455	B-12
Q456	C-4
Q459	F-10
Q463	E-4
Q464	B-12
Q468	B-9
Q469	B-6

DM-23P BOARD (CONDUCTOR SIDE)

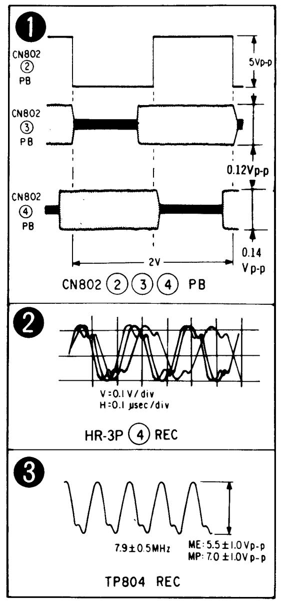

A
B
C
D
E
CN552
CN553
CN554
IC552
IC551
IC554
IC553
RV551
C564
Q564
Q568
Q550
Q551
1-629-183-
21

D550	J-1
IC551	B-3
IC552	B-2
IC553	C-1
IC554	B-4
Q550	C-3
Q551	C-5
Q552	I-4
Q555	H-4
Q556	H-4
Q557	H-1
Q561	J-4
Q562	I-5
Q563	G-1
Q564	B-3
Q568	C-3

DM-23P BOARD (COMPONENT SIDE)


F
G
H
I
J
Q563
Q557
Q556
Q555
Q562
Q552
C559
C565
1-629-183-
21
1
2
3
4
5

MR-20 BOARD

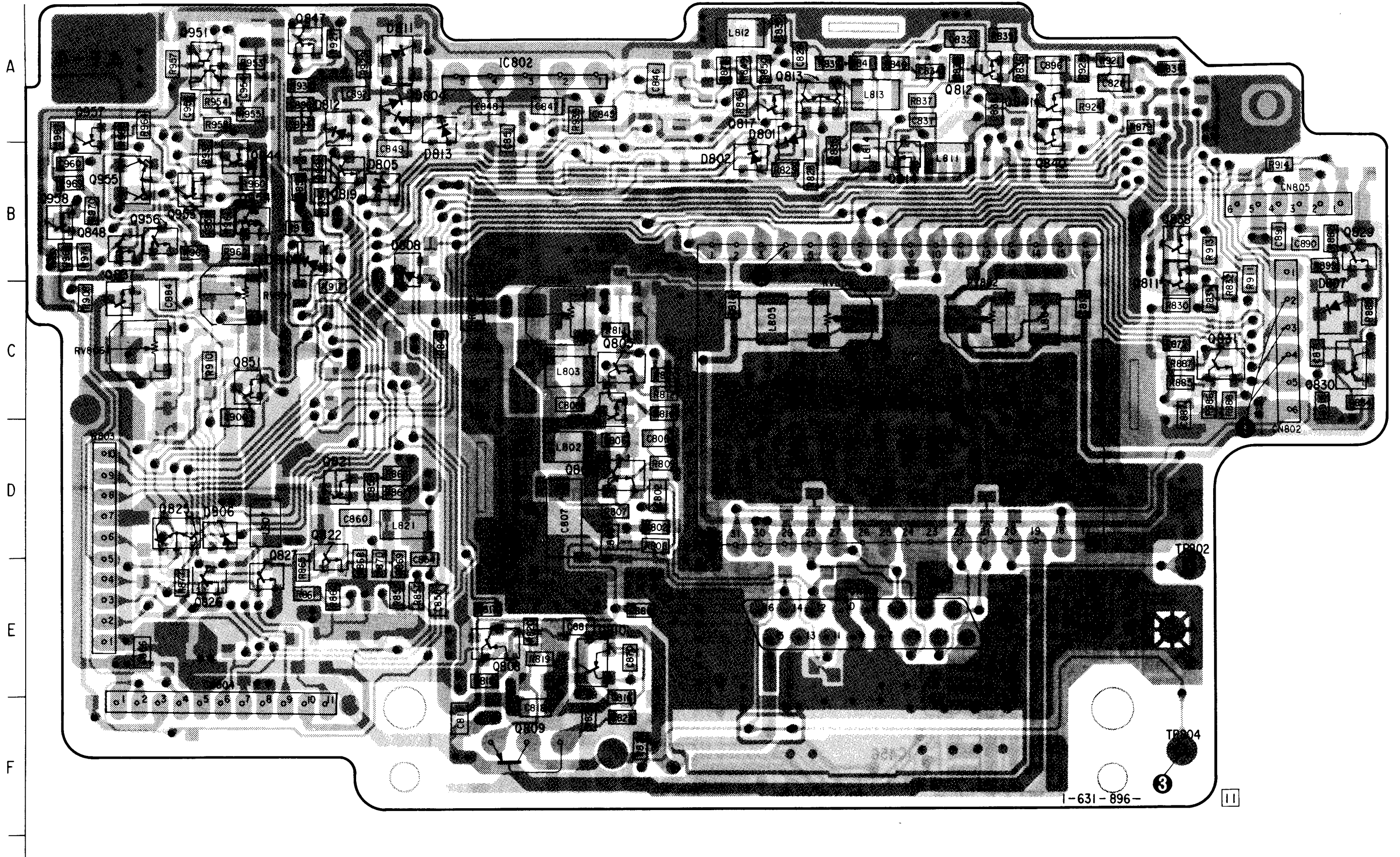


D801	A-6
D802	B-6
D804	A-3
D805	B-3
D806	D-2
D807	C-10
D808	B-3
D810	B-3
D811	A-3
D812	A-3
D813	A-3
D814	J-1
IC801	A-4
IC802	L-7
Q801	I-5
Q802	I-5
Q803	D-5
Q804	C-5
Q805	C-5
Q806	J-5
Q807	H-4
Q808	E-4
Q809	F-4
Q810	E-5
Q811	C-9
Q812	A-7
Q813	A-6
Q814	B-7
Q815	L-5
Q817	A-6
Q819	B-3
Q820	H-3
Q821	D-3
Q822	D-3
Q823	J-3
Q824	J-3
Q825	D-2
Q826	E-2
Q827	E-2
Q828	L-6
Q829	B-10
Q830	C-10
Q831	C-9
Q832	J-9
Q833	L-4
Q836	K-2
Q837	C-1
Q838	B-9
Q839	L-8
Q840	A-8
Q841	A-8
Q842	L-3
Q843	K-2
Q844	B-2
Q847	A-3
Q848	B-1
Q849	K-5
Q850	I-1
Q851	C-2
Q852	J-1
Q951	A-2
Q952	L-2
Q953	B-2
Q954	B-2
Q955	B-1
Q956	B-1
Q957	A-1
Q958	B-1
Q959	L-2

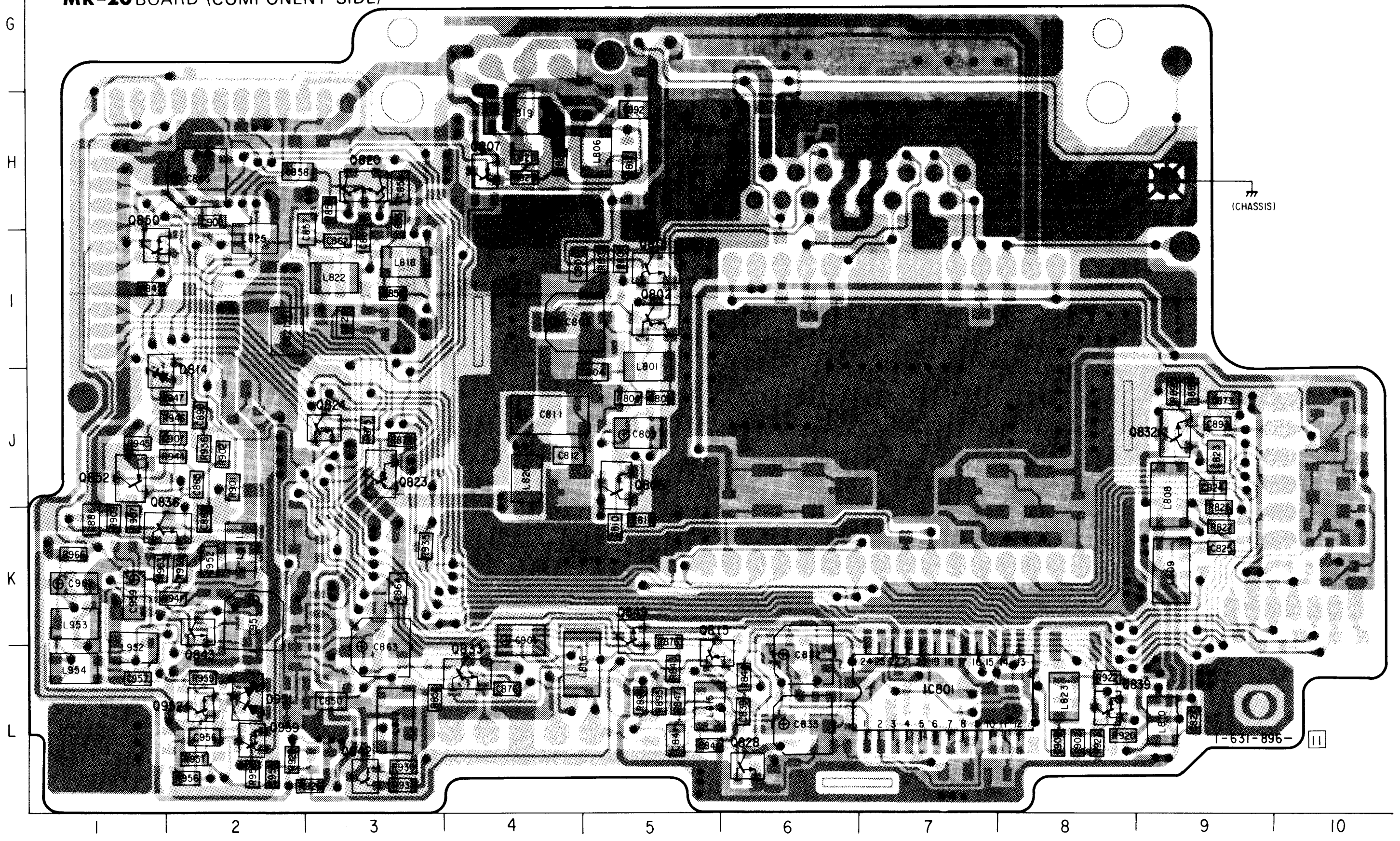
MR-20 (REC/PB AMP, REC Y/C/AFM/ATF MIX) PRINTED WIRING BOARD

—Ref. No. MR-20 BOARD: 1000 series—

MR-20 BOARD (CONDUCTOR SIDE)


A
B
C
D
E
F
IC802
TP802
TP804
❸
CN805
CN802
1-631-896-
11

MR-20 BOARD (COMPONENT SIDE)


G
H
I
J
K
L
1
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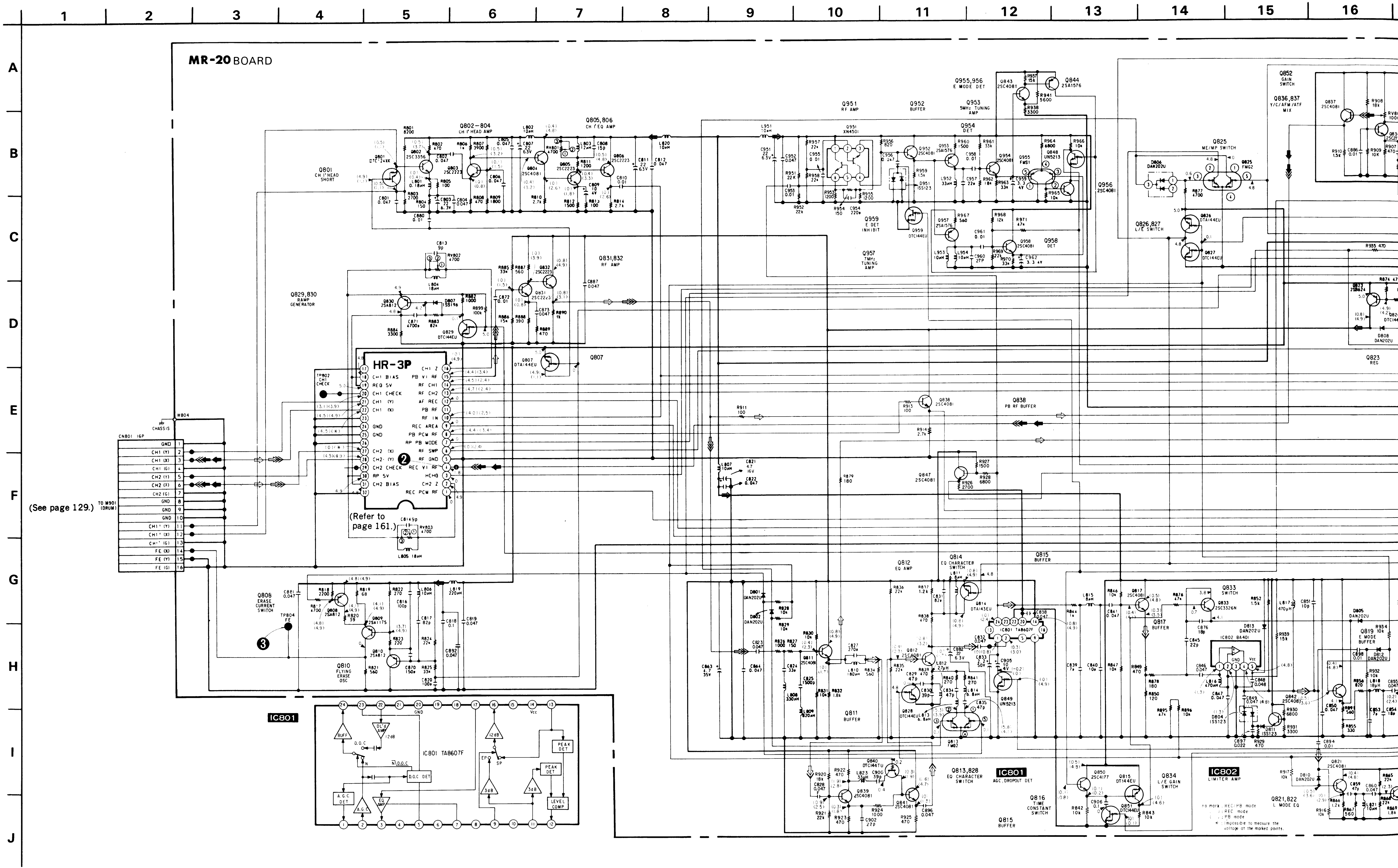
9
10
(CHASSIS)
IC801
1-631-896-
11

MR-20 (REC/PB AMP, REC Y/C/AFM/ATF MIX) SCHEMATIC DIAGRAM

—Ref. No. MR-20 BOARD: 1000 series—



MR-20 BOARD
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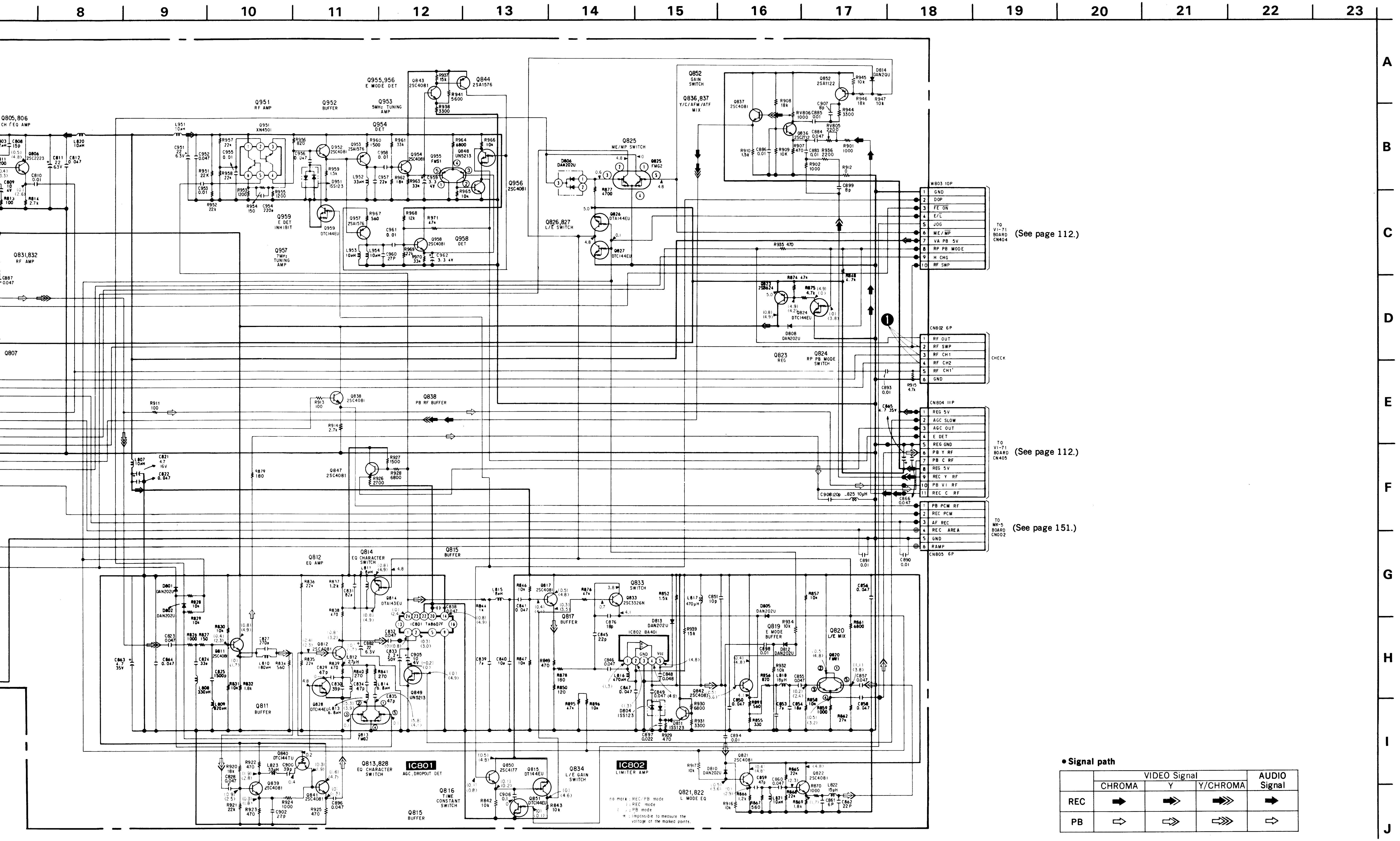
16
A
B
C
D
E
F
G
H
I
J
HR-3P
IC801
IC801 TA8607F
IC802
LIMITER AMP
AGC, DROPOUT DET
CN801 16P
CHASSIS
W804
GND
CH1 (Y)
CH1 (X)
CH1 (G)
CH2 (Y)
CH2 (X)
CH2 (G)
CH1' (Y)
CH1' (X)
CH1' (G)
FE (X)
FE (Y)
FE (G)
(See page 129.)
TO M901 (DRUM)
(Refer to page 161.)
TP802 CH1 CHECK
TP804 FE
Q801 CH 1' HEAD SHORT
Q802–804 CH 1' HEAD AMP
Q805,806 CH 1' EQ AMP
Q829,830 RAMP GENERATOR
Q831,832 RF AMP
Q807
Q808 ERASE CURRENT SWITCH
Q810 FLYING ERASE OSC
Q812 EQ AMP
Q814 EQ CHARACTER SWITCH
Q815 BUFFER
Q811 BUFFER
Q813,828 EQ CHARACTER SWITCH
Q816 TIME CONSTANT SWITCH
Q817 BUFFER
Q833 SWITCH
Q834 L/E GAIN SWITCH
Q838 PB RF BUFFER
Q847
Q951 RF AMP
Q952 BUFFER
Q953 5MHz TUNING AMP
Q954 DET
Q955,956 E MODE DET
Q956
Q957 7MHz TUNING AMP
Q958 DET
Q959 E DET INHIBIT
Q825 ME/MP SWITCH
Q826,827 L/E SWITCH
Q852 GAIN SWITCH
Q836,837 Y/C/AFM/ATF MIX
Q823 REG
Q819 E MODE BUFFER
Q821,822 L MODE EQ
BUFF
D.O.C
A.G.C DET
A.G.C
EQ AMP
D.O.C DET
PEAK DET
LEVEL COMP
no mark : REC/PB mode
( ) : REC mode
( ) : PB mode
∗ : Impossible to measure the voltage of the marked points.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18
19
20
21
22
23
A
B
C
D
E
F
G
H
I
J
Q805,806
CH EQ AMP
Q831,832
RF AMP
Q807
Q951
RF AMP
XN4501
Q952
BUFFER
Q955,956
E MODE DET
Q953
5MHz TUNING AMP
Q954
DET
Q956
2SC4081
Q959
E DET INHIBIT
Q957
7MHz TUNING AMP
Q958
DET
Q843
2SC4081
Q844
2SA1576
Q852
GAIN SWITCH
Q836,837
Y/C/AFM/ATF MIX
Q825
ME/MP SWITCH
FMG2
D806
DAN202U
Q826,827
L/E SWITCH
Q826
DTA144EU
Q827
DTC144EU
Q837
2SC4081
Q852
2SA1122
D814
DAN202U
Q836
2SC2712
Q823
2SB624
Q824
DTC144EU
D808
DAN202U
Q823
REG
Q824
RP PB MODE SWITCH
Q838
2SC4081
Q838
PB RF BUFFER
Q847
2SC4081
W803 10P
1 GND
2 DOP
3 FE ON
4 E/L
5 JOG
6 ME/MP
7 VA PB 5V
8 RP PB MODE
9 H CHG
10 RF SWP
TO VI-71 BOARD CN404
(See page 112.)
CN802 6P
1 RF OUT
2 RF SWP
3 RF CH1
4 RF CH2
5 RF CH1'
6 GND
CHECK
CN804 11P
1 REG 5V
2 AGC SLOW
3 AGC OUT
4 E DET
5 REG GND
6 PB Y RF
7 PB C RF
8 REG 5V
9 REC Y RF
10 PB VI RF
11 REC C RF
TO VI-71 BOARD CN405
(See page 112.)
1 PB PCM RF
2 REC PCM
3 AF REC
4 REC AREA
5 GND
6 RAMP
CN805 6P
TO MK-5 BOARD CN002
(See page 151.)
❶
Q812
EQ AMP
Q814
EQ CHARACTER SWITCH
Q814
DTA143EU
Q815
BUFFER
IC801
TA8607F
Q811
BUFFER
Q812
2SC4081
Q828
DTC144EU
Q813
FMG2
Q849
UN5213
Q817
2SC4081
Q817
BUFFER
Q833
SWITCH
Q833
2SC3326N
IC802 BA401
D813
DAN202U
D805
DAN202U
Q819
E MODE BUFFER
Q820
L/E MIX
Q820
FMW1
D812
DAN202U
D804
1SS123
D811
1SS123
Q842
2SC4081
Q840
DTC144TU
Q839
2SC4081
Q841
2SC4081
Q813,828
EQ CHARACTER SWITCH
IC801
AGC,DROPOUT DET
Q816
TIME CONSTANT SWITCH
Q815
BUFFER
Q850
2SC4177
Q815
DTC144EU
Q851
DTC144EU
Q834
L/E GAIN SWITCH
IC802
LIMITER AMP
D810
DAN202U
Q821
2SC4081
Q822
2SC4081
Q821,822
L MODE EQ
no mark : REC/PB mode
( ) : REC mode
( ) : PB mode
* : impossible to measure the voltage at the marked points.

• Signal path

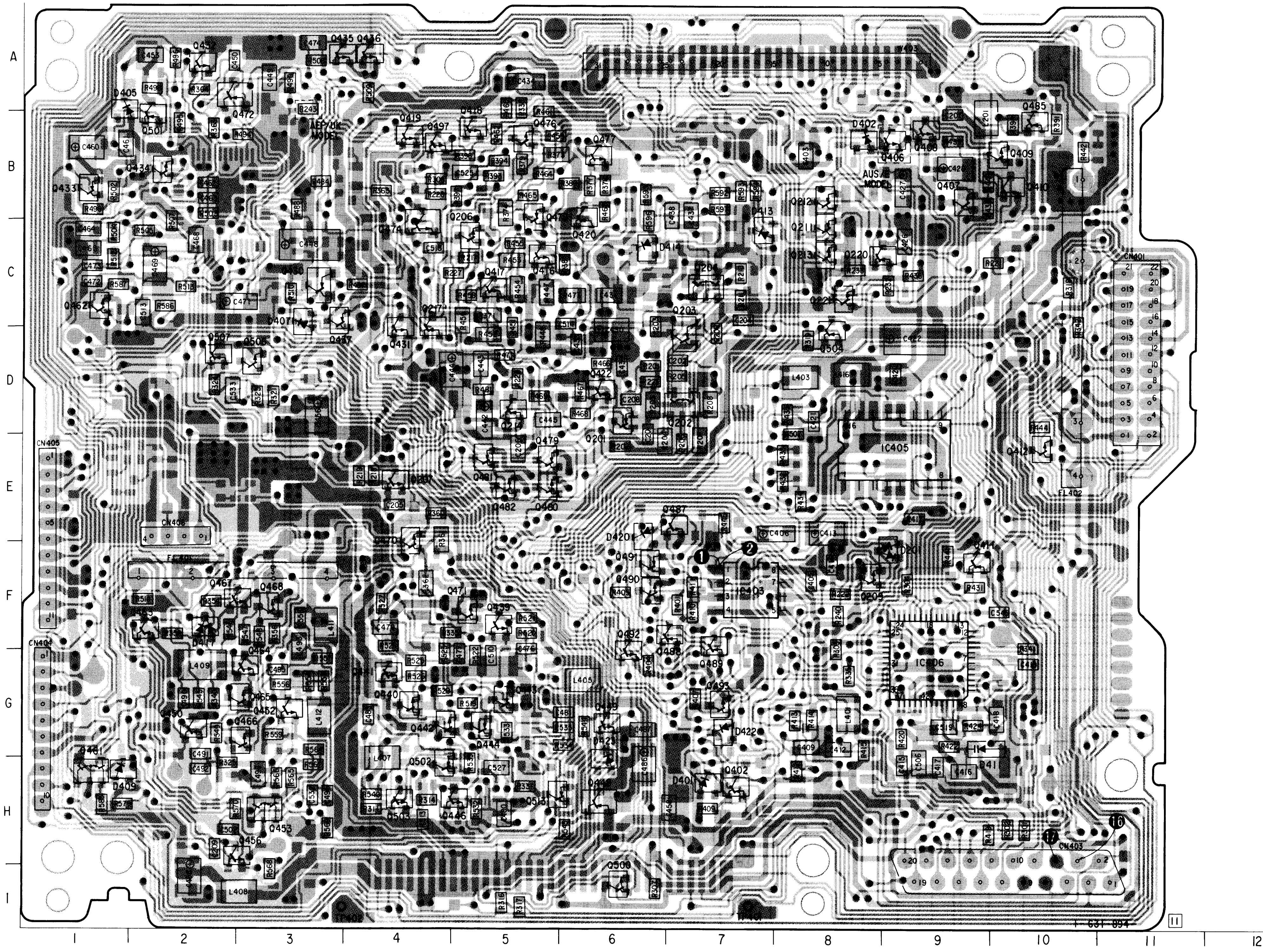
	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	➡
PB	⇨	⇨⇨	⇨⇨⇨	⇨

REC/PB AMP

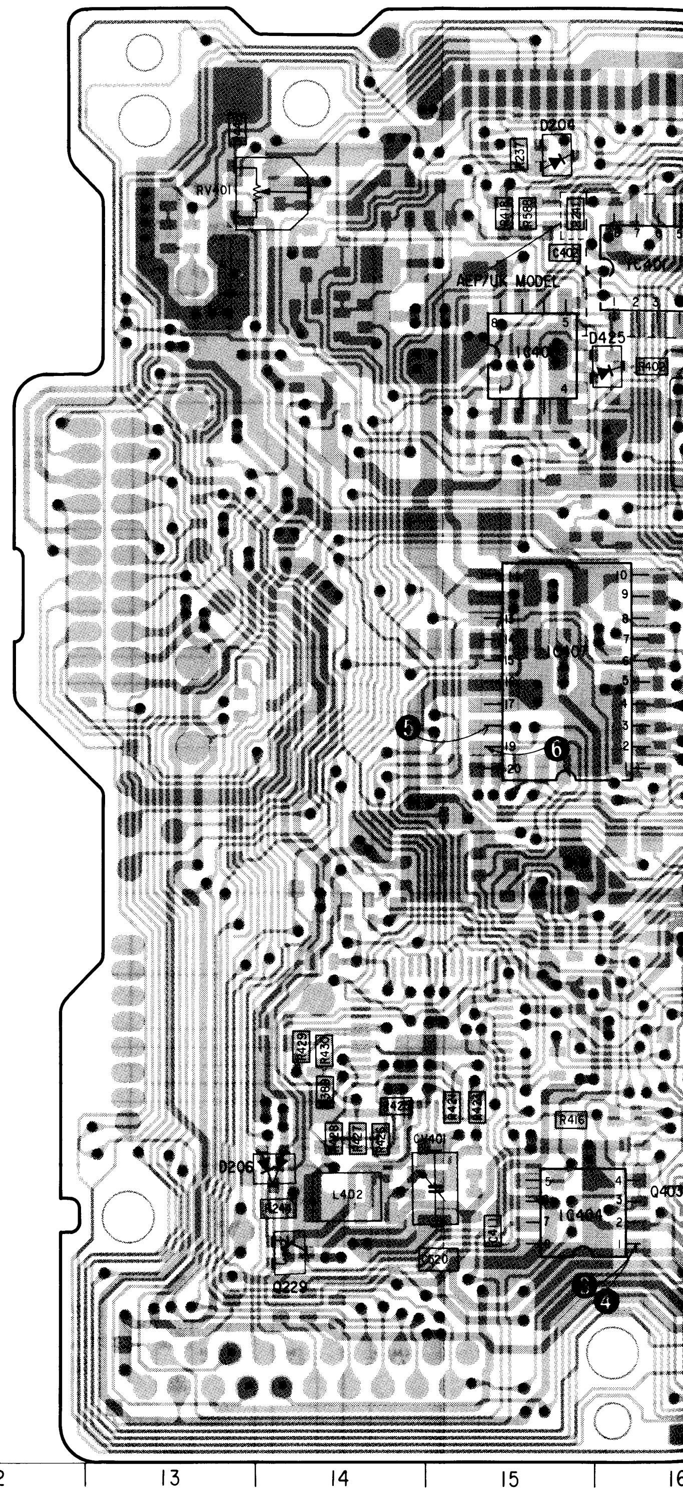
VI-71 (Y/C PROCESS) PRINTED WIRING BOARD
—Ref. No. VI-71 BOARD : 6000 series—

D201	F-8
D202	B-20
D204	A-15
D205	E-20
D206	G-14
D401	H-7
D402	B-8
D404	A-21
D405	A-1
D406	C-21
D407	C-3
D409	H-1
D411	G-9
D413	C-7
D414	C-6
D417	F-2
D418	B-18
D419	D-20
D420	E-6
D421	F-17
D422	G-7
D423	G-6
D424	D-21
D425	C-15
IC403	F-7
IC404	H-15
IC405	E-8
IC406	G-9
IC407	D-15
IC408	C-15
IC409	D-18
IC410	B-21
Q201	D-6
Q202	D-7
Q203	D-7
Q204	C-7
Q205	C-16
Q206	C-5
Q207	E-4
Q209	F-8
Q210	C-19
Q211	C-8
Q212	B-8
Q213	C-8
Q214	D-5
Q215	H-21
Q216	C-19
Q217	C-4
Q220	C-8
Q221	C-8
Q225	G-18
Q226	C-17
Q228	B-17
Q229	H-14
Q402	H-7
Q403	G-16
Q404	G-16
Q407	B-9
Q408	B-9
Q409	B-9
Q410	B-10
Q411	F-9
Q412	E-10
Q415	C-18
Q416	C-5
Q417	C-5
Q418	B-5
Q419	B-4
Q420	B-6
Q422	D-6
Q424	B-16
Q426	C-16
Q427	C-20
Q429	B-20
Q430	C-3
Q431	C-4
Q432	A-2
Q433	B-1
Q434	B-2
Q435	A-3
Q436	A-4
Q437	C-3
Q438	G-19
Q439	F-5
Q440	G-4
Q441	G-4
Q442	G-4
Q443	G-5
Q444	G-5
Q445	H-19
Q446	H-4
Q447	G-19
Q448	H-6
Q449	G-6
Q450	G-2
Q451	H-21
Q452	G-3
Q453	H-3
Q454	G-20
Q455	G-22
Q456	H-2
Q460	G-22
Q461	H-1
Q462	C-1
Q463	F-2
Q464	G-3
Q465	G-3
Q466	G-2
Q467	F-2
Q468	F-3
Q469	C-20
Q470	E-4
Q471	F-5
Q472	A-2
Q473	C-20
Q474	C-4
Q475	C-19
Q476	B-5
Q477	B-6
Q478	C-5
Q479	E-5
Q480	E-5
Q481	E-5
Q482	E-5
Q483	C-20
Q485	B-10
Q486	B-19
Q487	E-7
Q488	F-6
Q489	F-7
Q490	F-6
Q491	F-6
Q492	F-6
Q493	G-7
Q497	B-4
Q498	G-18
Q499	F-19
Q500	I-6
Q501	B-2
Q502	H-4
Q503	H-4
Q504	D-8
Q505	D-21
Q506	D-3
Q507	D-2
Q509	E-22
Q510	E-21
Q513	H-5

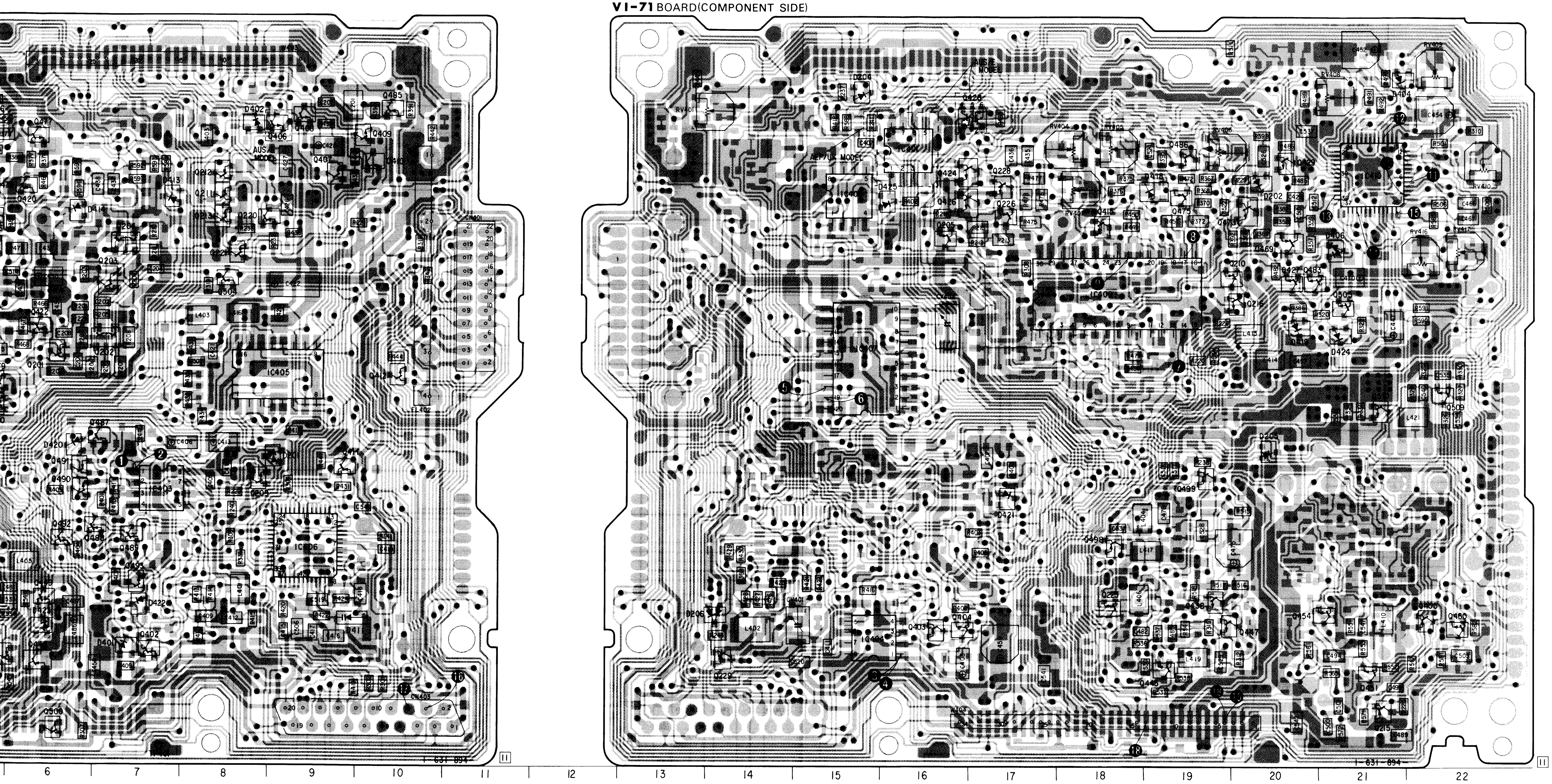
VI-71 BOARD (CONDUCTOR SIDE)



VI-71 BOARD(COMPONENT SIDE)



VI-71 BOARD(COMPONENT SIDE)



AUS MODEL
AEP/UK MODEL
IC403
IC405
IC406
CN401
CN403
IC401
IC402
IC404
1-631-894-
11
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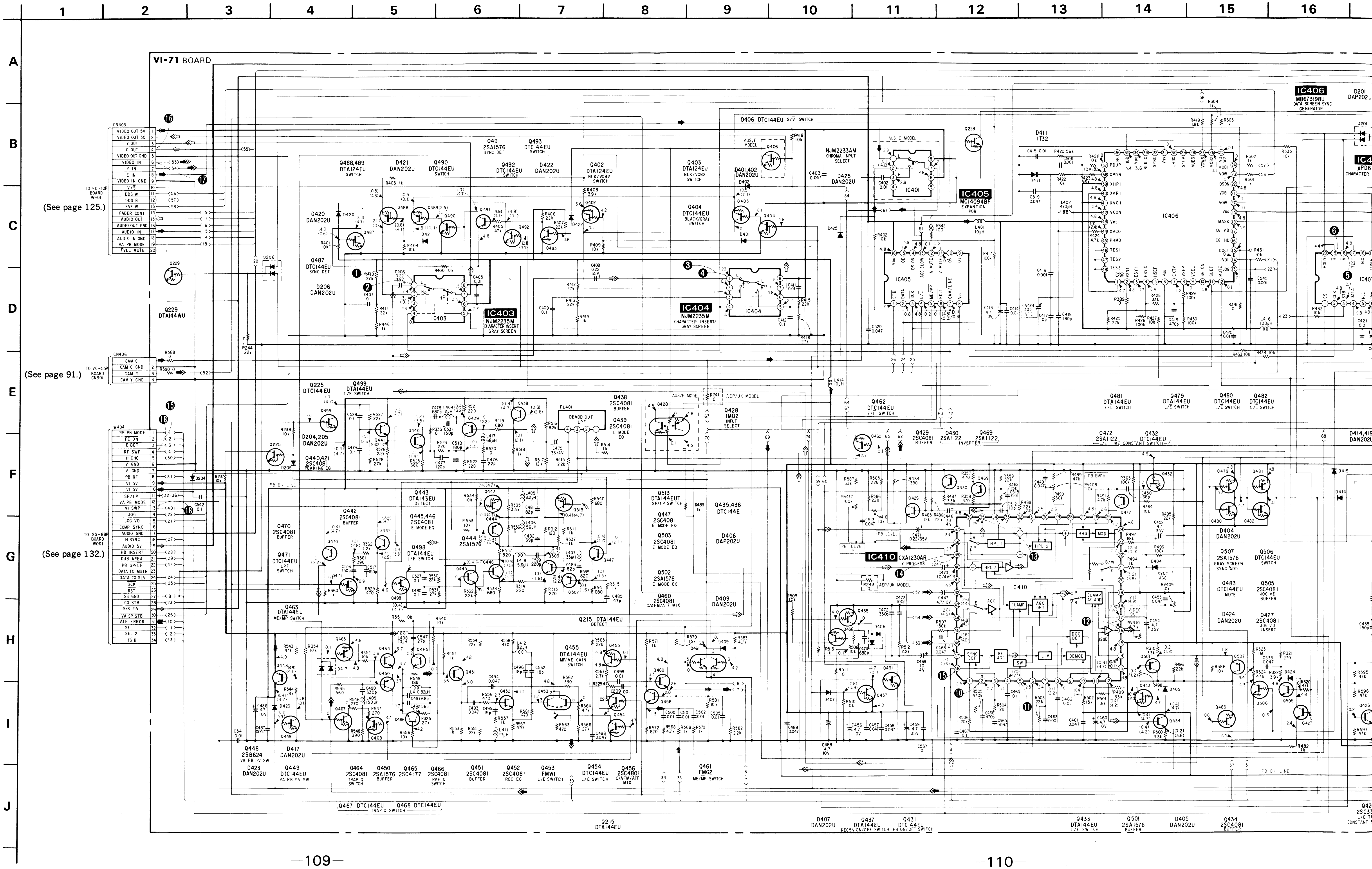
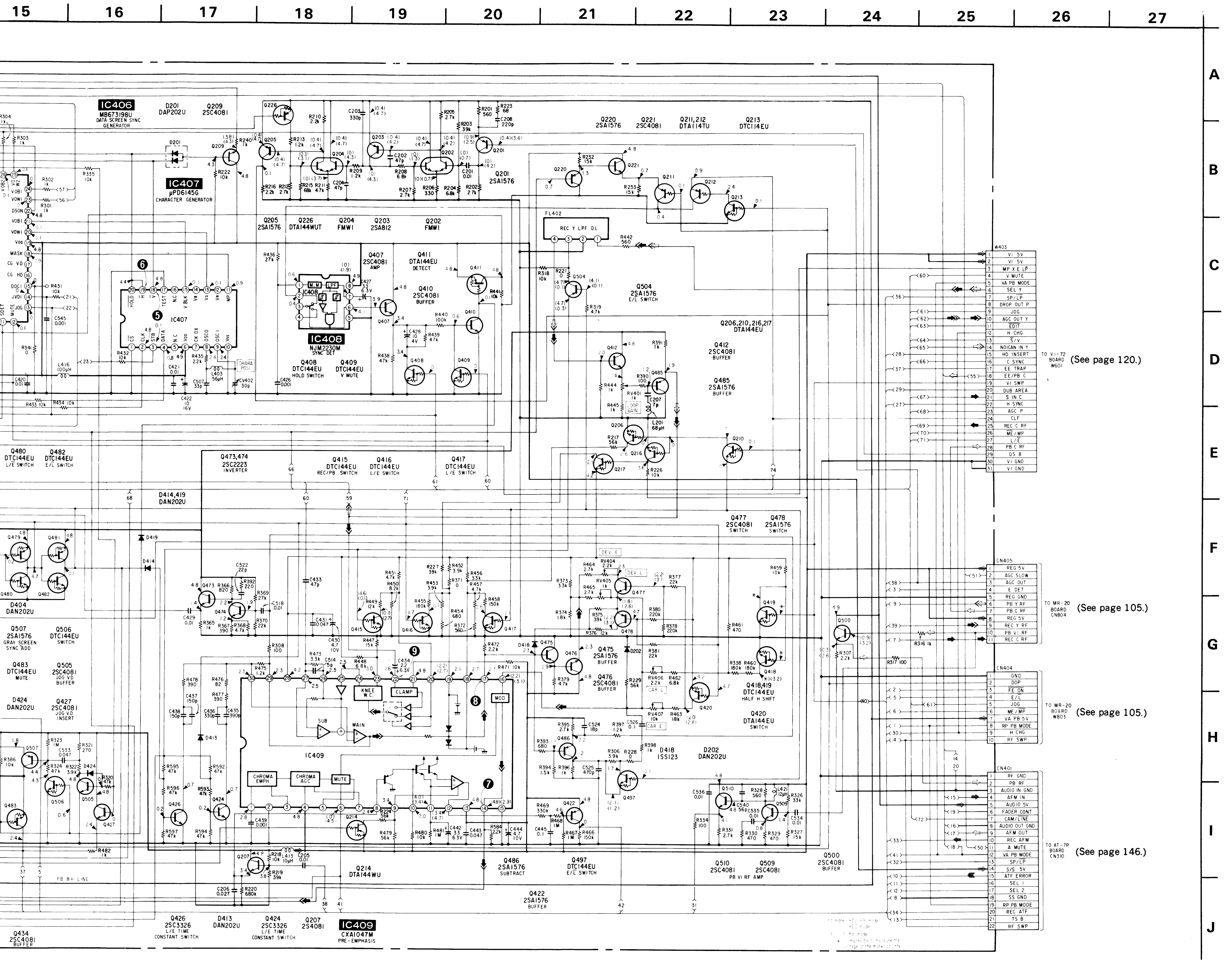
VI-71 (Y/C PROCESS) SCHEMATIC DIAGRAM

—Ref. No. VI-71 BOARD : 6000 series—


VI-71 BOARD
CN403
TO FD-10P BOARD W901
(See page 125.)
CN406
TO VC-55P BOARD CN301
(See page 91.)
W404
TO SS-88P BOARD W001
(See page 132.)
IC403 NJM2235M CHARACTER INSERT GRAY SCREEN
IC404 NJM2235M CHARACTER INSERT/ GRAY SCREEN
IC405 MC14094BF EXPANTION PORT
IC406 MB673198U DATA SCREEN SYNC GENERATOR
IC410 CXA1230AR Y PROCESS
IC401
FL401 DEMOD OUT LPF
D406 DTC144EU S/V SWITCH
NJM2233AM CHROMA INPUT SELECT
Q229 DTA144WU
Q428 IMD2 INPUT SELECT
PB B+ LINE
AUS,E MODEL
AEP/UK MODEL
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H I J


15
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22
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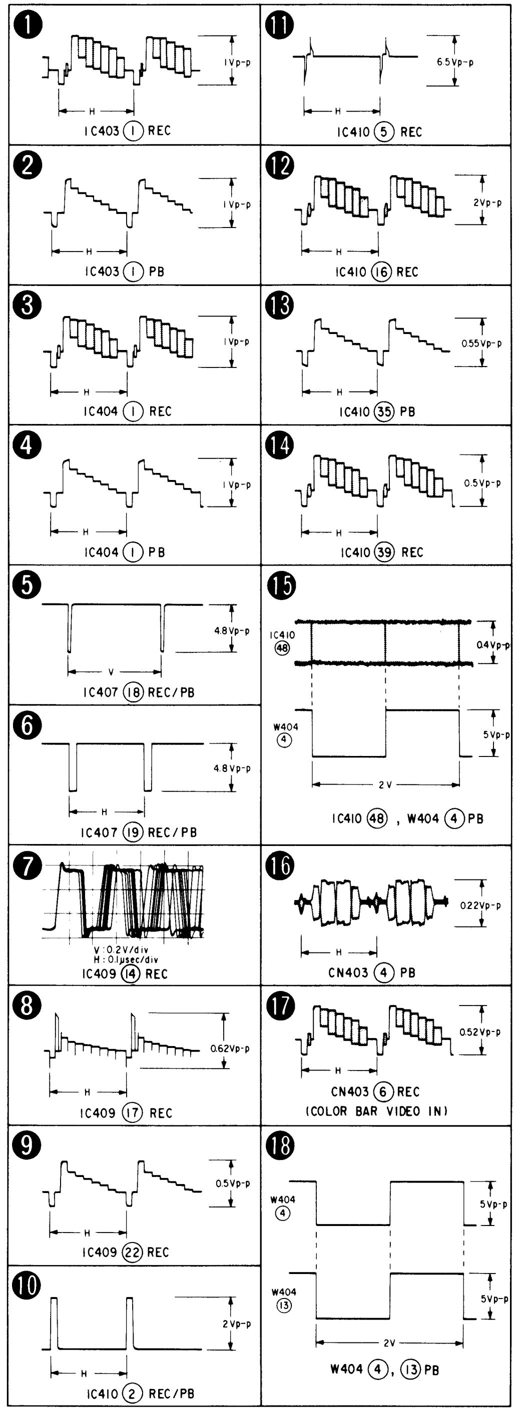
24
25
26
27
A
B
C
D
E
F
G
H
I
J
IC406
MB673198U
DATA SCREEN SYNC GENERATOR
D201
DAP202U
Q209
2SC4081
IC407
μPD6145G
CHARACTER GENERATOR
Q205
2SA1576
Q226
DTA144WUT
Q204
FMW1
Q203
2SA812
Q202
FMW1
Q201
2SA1576
Q220
2SA1576
Q221
2SC4081
Q211,212
DTA114TU
Q213
DTC114EU
FL402
REC Y LPF DL
Q407
2SC4081
AMP
Q411
DTA144EU
DETECT
Q410
2SC4081
BUFFER
IC408
NJM2230M
SYNC DET
Q408
DTC144EU
HOLD SWITCH
Q409
DTC144EU
V MUTE
Q504
2SA1576
E/L SWITCH
Q206,210,216,217
DTA144EU
Q412
2SC4081
BUFFER
Q485
2SA1576
BUFFER
W403
TO VI-72 BOARD W601
(See page 120.)
Q480
DTC144EU
L/E SWITCH
Q482
DTC144EU
E/L SWITCH
Q473,474
2SC2223
INVERTER
Q415
DTC144EU
REC/PB SWITCH
Q416
DTC144EU
L/E SWITCH
Q417
DTC144EU
L/E SWITCH
D414,419
DAN202U
Q477
2SC4081
SWITCH
Q478
2SA1576
SWITCH
D404
DAN202U
Q507
2SA1576
GRAY SCREEN SYNC ADD
Q506
DTC144EU
SWITCH
Q483
DTC144EU
MUTE
Q505
2SC4081
BUFFER
D424
DAN202U
Q427
2SC4081
JOG VD INSERT
CN405
TO MR-20 BOARD CN804
(See page 105.)
Q475
2SA1576
BUFFER
Q476
2SC4081
BUFFER
Q418,419
DTC144EU
HALF H SHIFT
Q420
DTA144EU
SWITCH
CN404
TO MR-20 BOARD W803
(See page 105.)
IC409
KNEE W.C.
CLAMP
MOD
SUB
MAIN
CHROMA EMPH
CHROMA AGC
MUTE
D418
1SS123
D202
DAN202U
CN401
TO AT-7P BOARD CN310
(See page 146.)
Q486
2SA1576
SUBTRACT
Q497
DTC144EU
E/L SWITCH
Q510
2SC4081
Q509
2SC4081
PB VI RF AMP
Q500
2SC4081
BUFFER
Q214
DTA144WU
Q422
2SA1576
BUFFER
Q426
2SC3326
L/E TIME CONSTANT SWITCH
D413
DAN202U
Q424
2SC3326
L/E TIME CONSTANT SWITCH
Q207
2SA4081
IC409
CXA1047M
PRE-EMPHASIS
Q434
2SC4081
BUFFER
PB B+ LINE

VI-71 BOARD


❶
IC403 ① REC
1Vp-p
❷
IC403 ① PB
❸
IC404 ① REC
❹
IC404 ① PB
❺
IC407 ⑱ REC/PB
4.8Vp-p
❻
IC407 ⑲ REC/PB
❼
V:0.2V/div
H:0.1μsec/div
IC409 ⑭ REC
❽
IC409 ⑰ REC
0.62Vp-p
❾
IC409 ㉒ REC
0.5Vp-p
❿
IC410 ② REC/PB
2Vp-p
⓫
IC410 ⑤ REC
6.5Vp-p
⓬
IC410 ⑯ REC
2Vp-p
⓭
IC410 ㉟ PB
0.55Vp-p
⓮
IC410 ㊴ REC
0.5Vp-p
⓯
IC410 (48)
W404 ④
0.4Vp-p
5Vp-p
2V
IC410 (48) , W404 ④ PB
⓰
CN403 ④ PB
0.22Vp-p
⓱
CN403 ⑥ REC
(COLOR BAR VIDEO IN)
0.52Vp-p
⓲
W404 ④
W404 ⑬
5Vp-p
2V
W404 ④, ⑬ PB
H
V

● **Signal path**

	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC	➡	⇛	⇛	➡
PB	⇨	⇨	⇨	⇨

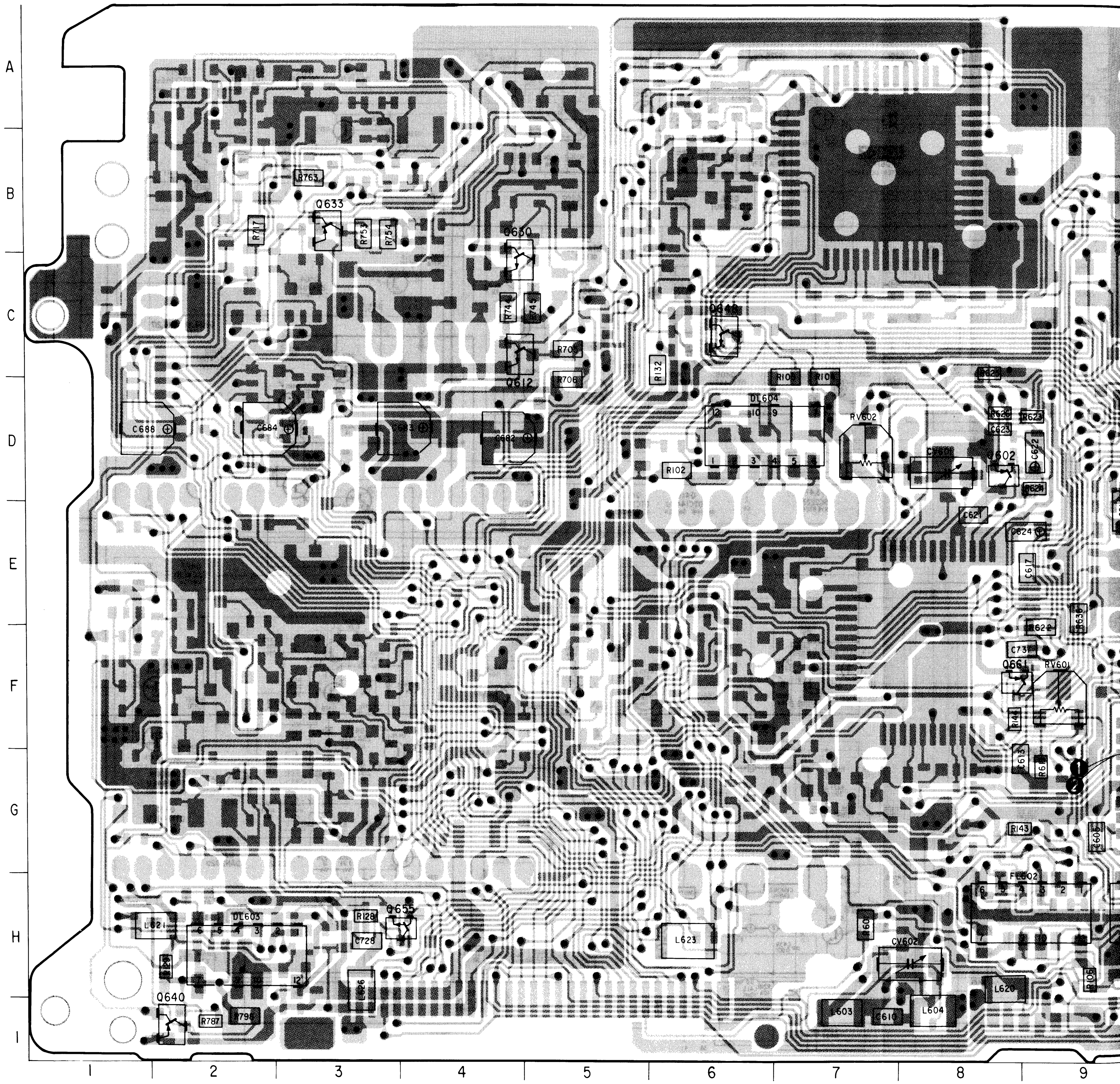
	REC	REC/PB	PB
Ref. signal	➤	➢	▷

VI-72 (Y/C PROCESS) PRINTED WIRING BOARD

—Ref. No. VI-72 BOARD : 1000 series—

D602	C-17
D603	C-13
D604	B-13
D605	B-13
D609	H-13
D612	F-22
D614	C-19
D616	D-22
D619	I-13
D620	C-18
D621	F-20
D622	E-19
D623	B-17
D624	D-21
IC601	G-10
IC602	F-15
IC603	D-10
IC604	B-16
IC605	H-15
IC606	H-13
IC609	C-19
Q601	I-16
Q602	D-8
Q604	G-15
Q605	D-14
Q606	G-14
Q608	H-14
Q609	E-20
Q610	D-21
Q612	C-4
Q613	C-18
Q614	A-20
Q615	A-21
Q616	A-21
Q617	B-21
Q618	B-21
Q621	F-21
Q622	E-22
Q624	E-21
Q625	F-21
Q627	F-20
Q628	F-20
Q630	C-4
Q631	B-19
Q632	C-19
Q633	B-3
Q634	B-19
Q636	C-20
Q638	A-18
Q639	A-18
Q640	I-2
Q641	D-20
Q644	E-19
Q645	G-21
Q646	H-21
Q647	H-20
Q648	C-6
Q649	G-19
Q650	F-19
Q651	I-21
Q652	F-17
Q654	G-13
Q655	H-3
Q656	F-20
Q657	B-21
Q660	D-20
Q661	F-8
Q662	A-17
Q663	F-18
Q664	F-18

VI-72 BOARD (COMPONENT SIDE)


A
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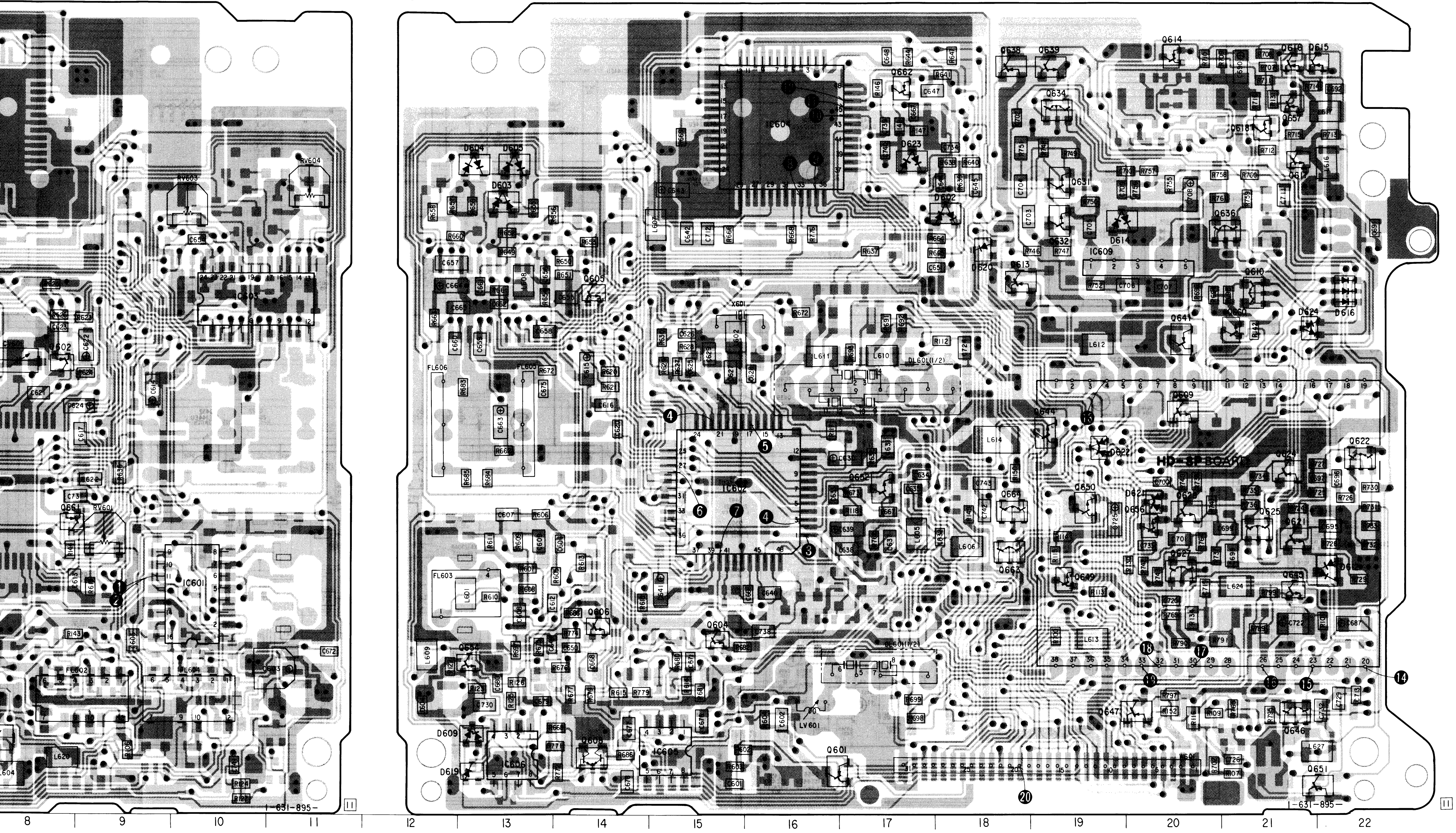
R763
Q633
R717
R753
R754
Q650
R744
R745
R709
R708
Q612
R132
Q641
R103
R101
DL604
RV602
R102
C688
C684
C683
C682
CV600
Q602
C621
C624
C617
C73
Q661
RV601
R143
FL602
L621
DL603
R128
Q655
C728
L623
CV602
L620
L603
C610
L604
R106
Q640
R787
R796

VI-72 BOARD (CONDUCTOR SIDE)


RV603
RV604
IC603
IC601
RV601
Q661
Q602
Q603
D604
D605
D603
Q605
FL606
FL605
FL603
Q606
Q604
Q634
D609
D619
Q608
IC606
IC605
X601
IC602
IC604
DL601(1/2)
DL601(1/2)
LV601
Q601
Q638
Q639
Q662
D623
D602
D620
Q613
Q634
Q631
Q632
D614
IC609
Q614
Q616
Q615
Q657
Q618
Q617
Q636
Q610
Q660
Q641
D624
D616
Q609
Q644
Q622
HD-SP BOARD
Q650
Q664
Q663
Q647
Q646
Q651
1-631-895-
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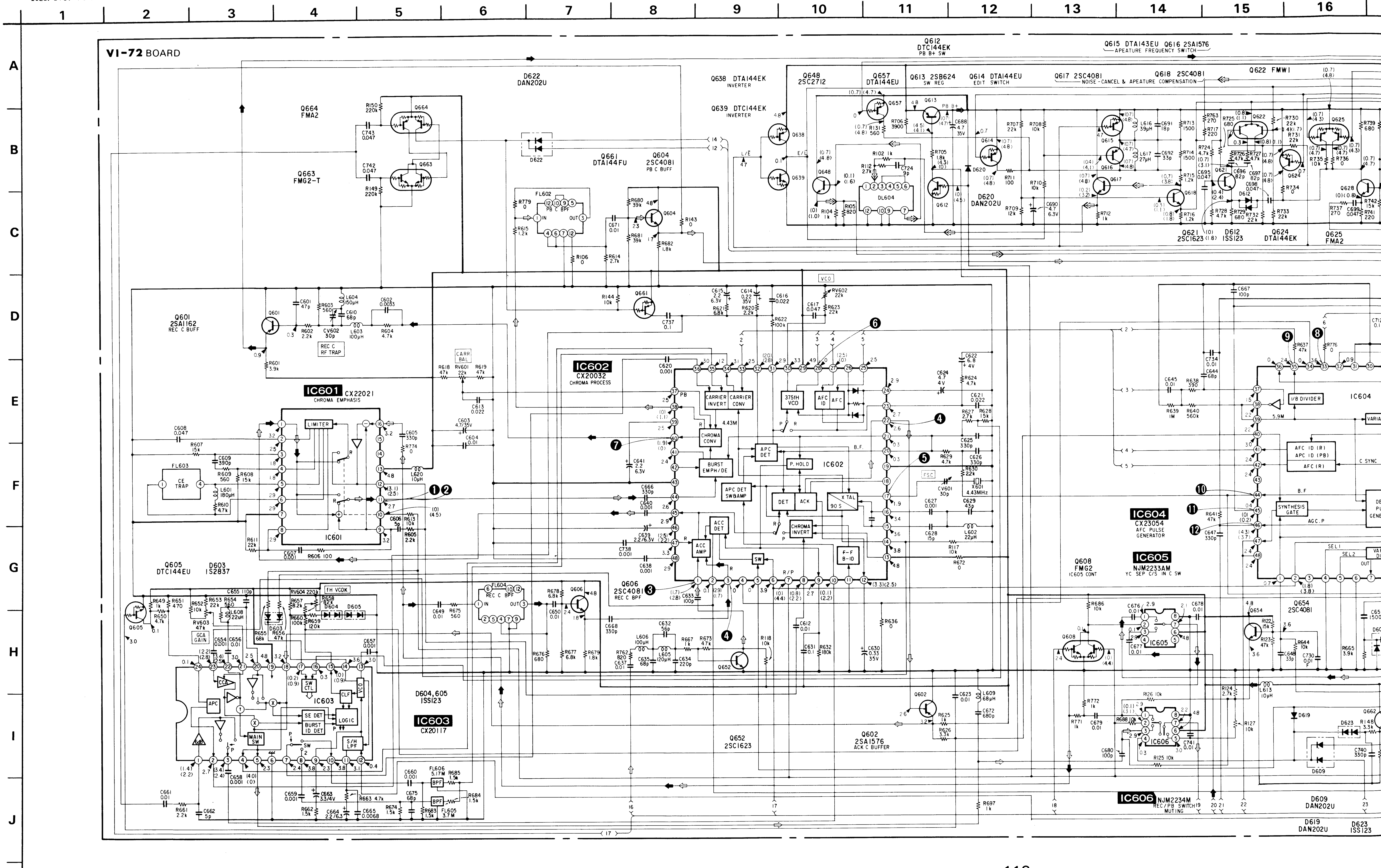
VI-72 (Y/C PROCESS) SCHEMATIC DIAGRAM

—Ref. No. VI-72 BOARD : 1000 series—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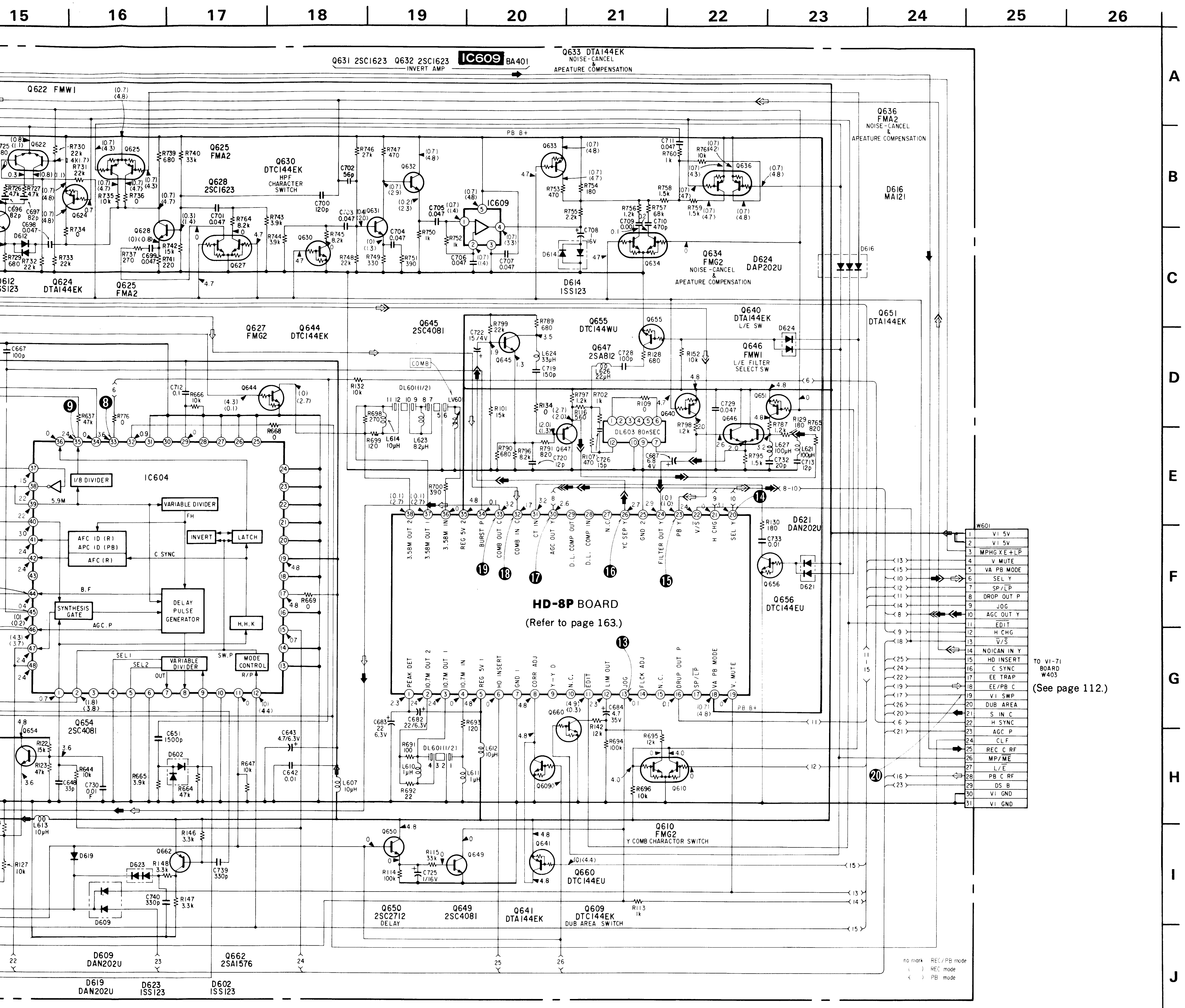
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
VI-72 BOARD
Q664 FMA2
Q663 FMG2-T
D622 DAN202U
Q661 DTA144FU
Q604 2SC4081 PB C BUFF
FL602 PB C BPF
Q638 DTA144EK INVERTER
Q639 DTC144EK INVERTER
Q648 2SC2712
Q612 DTC144EK PB B+ SW
Q657 DTA144EU
Q613 2SB624 SW REG
Q614 DTA144EU EDIT SWITCH
Q615 DTA143EU Q616 2SA1576 APEATURE FREQUENCY SWITCH
Q617 2SC4081
Q618 2SC4081 NOISE-CANCEL & APEATURE COMPENSATION
Q622 FMW1
DL604
D620 DAN202U
Q621 2SC1623
D612 1SS123
Q624 DTA144EK
Q625 FMA2
Q601 2SA1162 REC C BUFF
REC C RF TRAP
CARR BAL
VCO
IC601 CX22021 CHROMA EMPHASIS
LIMITER
FL603 CE TRAP
IC602 CX20032 CHROMA PROCESS
CARRIER INVERT
CARRIER CONV
375fH VCO
AFC ID
AFC
CHROMA CONV
BURST EMPH/DE
APC DET
P. HOLD
APC DET SW&AMP
DET
ACK
X TAL 90°S
ACC DET
ACC AMP
CHROMA INVERT
F-F B-ID
SW
4.43M
X601 4.43MHz
FSC
IC604 CX23054 AFC PULSE GENERATOR
1/8 DIVIDER
AFC ID (R)
AFC ID (PB)
AFC (R)
SYNTHESIS GATE
C SYNC
AGC.P
5.9M
IC605 NJM2233AM YC SEP C/S IN C SW
Q608 FMG2 IC605 CONT
Q654 2SC4081
Q605 DTC144EU
D603 1S2837
GCA GAIN
fH VCOK
D604,605 1SS123
IC603 CX20117
CCA
APC
SW CTL
VCO
CLF
LOGIC
SE DET
BURST ID DET
MAIN SW
S/H LPF
FL604 REC C BPF
Q606 2SC4081 REC C BPF
Q652 2SC1623
Q602 2SA1576 ACK C BUFFER
FL606 5.17M
FL605 3.7M
BPF
IC606 NJM2234M REC/PB SWITCH MUTING
D609 DAN202U
D619 DAN202U
D623 1SS123
Q662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24
25
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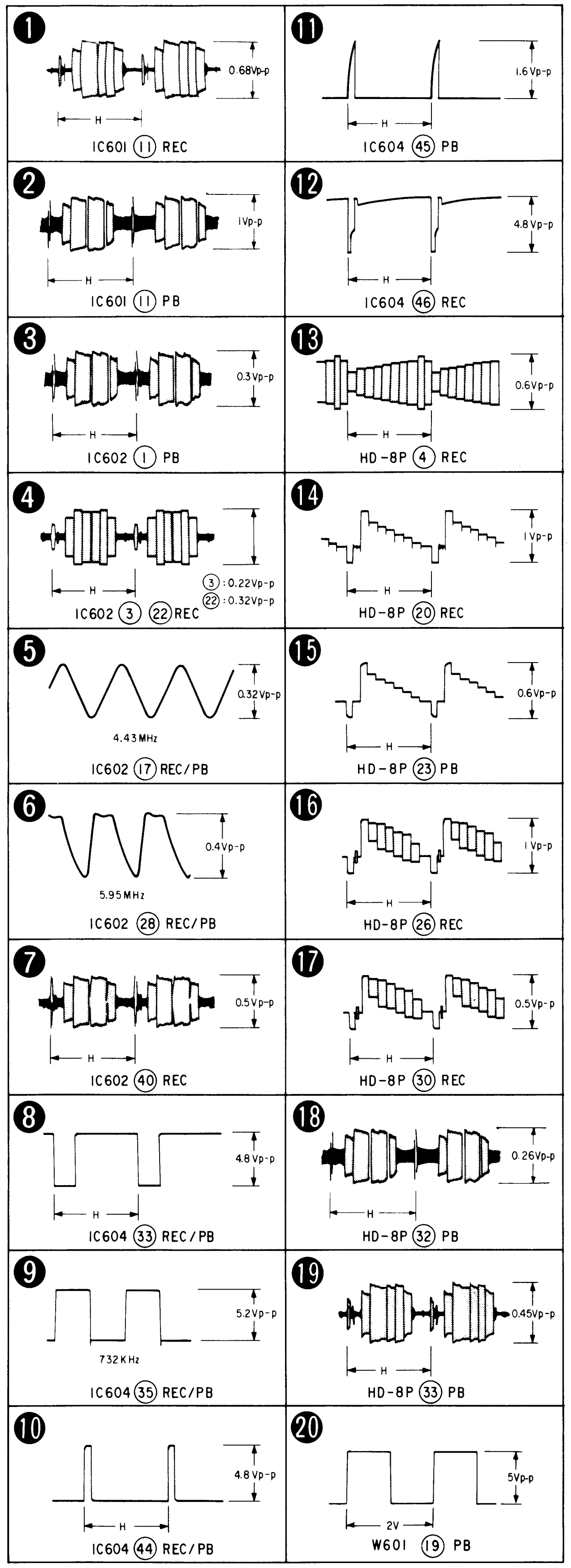
A
B
C
D
E
F
G
H
I
J
Q631 2SC1623 Q632 2SC1623 IC609 BA401
INVERT AMP
Q633 DTA144EK
NOISE-CANCEL & APEATURE COMPENSATION
Q622 FMW1
Q625 FMA2
Q628 2SC1623
Q630 DTC144EK
HPF CHARACTER SWITCH
Q636 FMA2
NOISE-CANCEL & APEATURE COMPENSATION
D616 MA121
PB B+
Q634 FMG2
NOISE-CANCEL & APEATURE COMPENSATION
D624 DAP202U
D614 1SS123
D612 1SS123
Q624 DTA144EK
Q625 FMA2
Q627 FMG2
Q644 DTC144EK
Q645 2SC4081
Q655 DTC144WU
Q647 2SA812
Q640 DTA144EK
L/E SW
Q646 FMW1
L/E FILTER SELECT SW
Q651 DTA144EK
DL601(1/2)
DL603 80nSEC
COMB
IC604
1/8 DIVIDER
5.9M
VARIABLE DIVIDER
FH
INVERT
LATCH
AFC ID (R)
APC ID (PB)
AFC (R)
C SYNC
B.F
SYNTHESIS GATE
AGC. P
DELAY PULSE GENERATOR
H.H.K
SEL 1
SEL 2
VARIABLE DIVIDER
OUT
SW.P
MODE CONTROL
R/P
HD-8P BOARD
(Refer to page 163.)
3.58M OUT 2
3.58M OUT 1
3.58M IN
REG 5V
BURST P
COMB OUT
COMB IN
CT IN
AGC OUT Y
D.L. COMP OUT
D.L. COMP IN
N.C
YC SEP
GND
FILTER OUT Y
PB Y
V/S
H CHG
SEL Y
PEAK DET
10.7M OUT 2
10.7M OUT 1
10.7M IN
REG 5V I
HD INSERT
GND I
CORR ADJ
Y-Y D
N.C.
EDIT
LIM OUT
JOG
FLCK ADJ
N.C.
DRUP OUT P
SP/LP
VA PB MODE
V. MUTE
D621 DAN202U
Q656 DTC144EU
Q654 2SC4081
Q610 FMG2
Y COMB CHARACTOR SWITCH
Q650 2SC2712
DELAY
Q649 2SC4081
Q641 DTA144EK
Q609 DTC144EK
DUB AREA SWITCH
Q660 DTC144EU
D609 DAN202U
Q662 2SA1576
D619 DAN202U
D623 1SS123
D602 1SS123
W601
1 VI 5V
2 VI 5V
3 MPHG X E+LP
4 V MUTE
5 VA PB MODE
6 SEL Y
7 SP/LP
8 DROP OUT P
9 JOG
10 AGC OUT Y
11 EDIT
12 H CHG
13 V/S
14 NOICAN IN Y
15 HD INSERT
16 C SYNC
17 EE TRAP
18 EE/PB C
19 VI SWP
20 DUB AREA
21 S IN C
22 H SYNC
23 AGC P
24 CLF
25 REC C RF
26 MP/ME
27 L/E
28 PB C RF
29 DS B
30 VI GND
31 VI GND
TO VI-71 BOARD W403
(See page 112.)
no mark REC/PB mode
( ) REC mode
< > PB mode

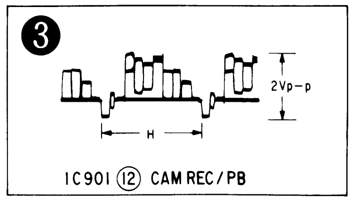
VI-72 BOARD



- **Signal path**

	VIDEO Signal			AUDIO Signal
	CHROMA		Y/CHROMA	
REC	➡	➡≫	➡⋙	➡
PB	⇨	⇨≫	⇨⋙	⇨

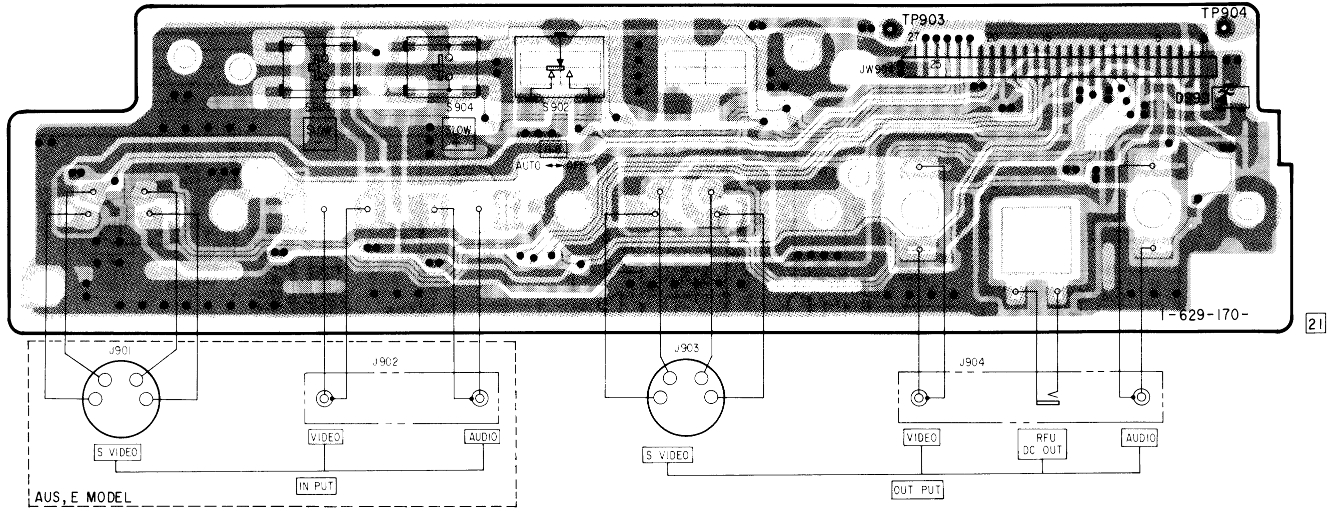
FD-10P BOARD

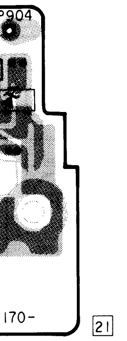


FD-10P (VIDEO AMP), PJ-21P (IN/OUT TERMINAL) PRINTED WIRING BOARDS

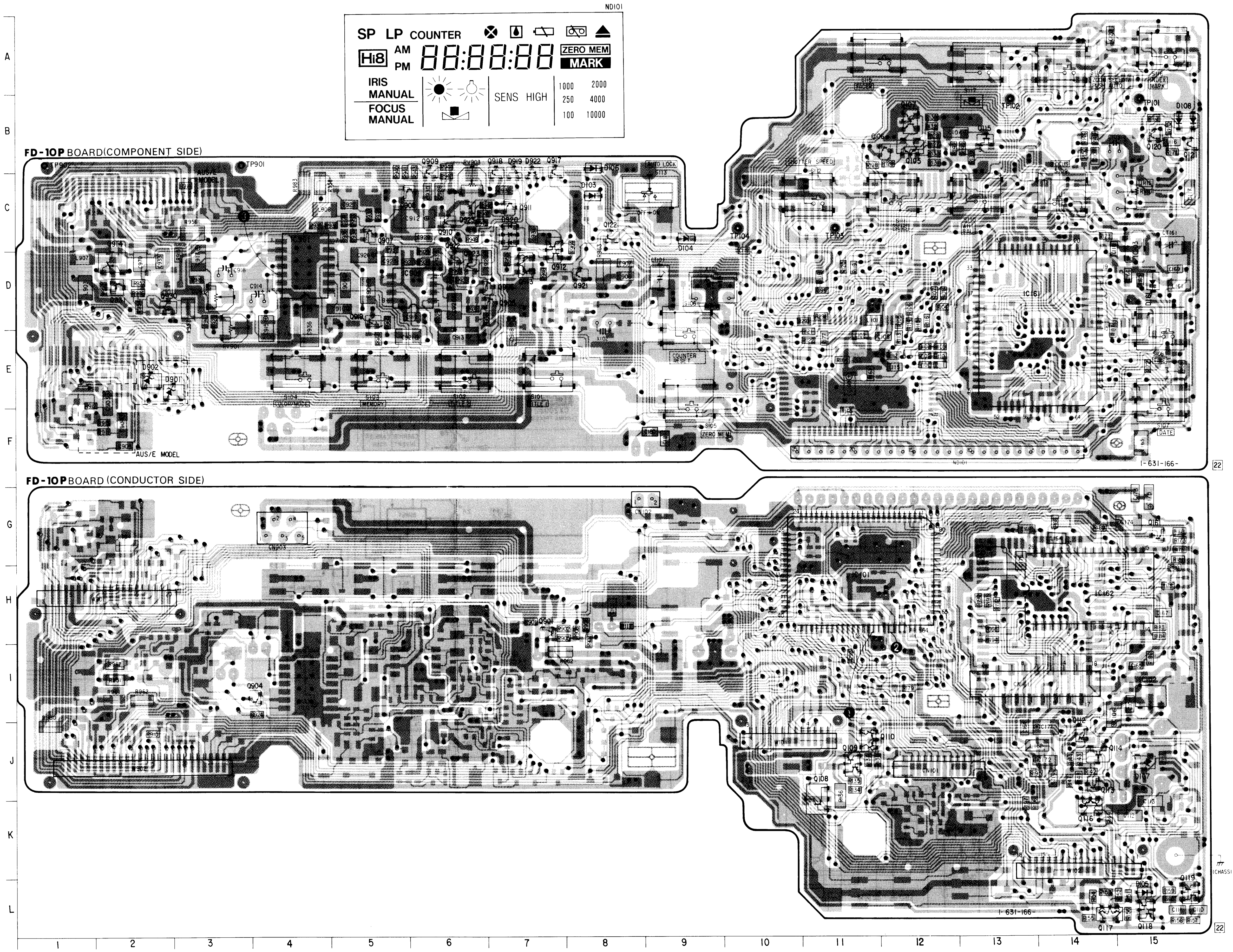
—Ref. No. FD-10P BOARD: 4000 series, PJ-21P BOARD: 5000 series—

PJ-21P BOARD


TP903
TP904
27
20
15
10
5
25
JW903
D999
S903
SLOW
S904
SLOW
S902
AUTO ↔ OFF
1-629-170-
21
J901
J902
J903
J904
S VIDEO
VIDEO
AUDIO
IN PUT
AUS, E MODEL
S VIDEO
VIDEO
RFU DC OUT
AUDIO
OUT PUT



D102	C-8
D104	D-9
D105	L-15
D107	J-15
D108	B-15
D161	D-15
D901	E-2
D902	E-2
D903	E-1
D904	G-1
D905	F-1
D906	F-1
D907	G-1
D908	G-1
D919	C-7
D920	C-7
D922	C-7
D923	C-6
IC101	H-11
IC102	I-15
IC103	C-15
IC161	D-13
IC162	H-14
IC901	D-4
IC902	D-6
Q105	B-12
Q106	B-12
Q107	B-12
Q108	K-11
Q109	J-11
Q110	J-11
Q112	J-14
Q113	J-14
Q114	J-14
Q115	B-13
Q116	K-14
Q117	L-14
Q118	L-15
Q119	L-15
Q120	B-15
Q121	B-15
Q122	C-8
Q161	G-15
Q901	I-7
Q904	I-4
Q905	D-7
Q906	D-7
Q907	C-5
Q908	C-6
Q909	C-6
Q910	C-6
Q911	C-7
Q912	D-7
Q913	D-7
Q914	D-2
Q915	I-2
Q917	C-7
Q918	C-7
Q919	E-5
Q921	D-8
Q922	D-6
Q923	D-6


ND101
SP LP COUNTER
Hi8
AM
PM
88:88:88
ZERO MEM
MARK
IRIS
MANUAL
FOCUS
MANUAL
SENS HIGH
1000 2000
250 4000
100 10000
FD-10P BOARD(COMPONENT SIDE)
FD-10P BOARD (CONDUCTOR SIDE)
AUS/E MODEL
TP901
TP902
TP101
TP102
TP103
TP104
AUTO LOCK
COUNTER RESET
ZERO MEM
SHUTTER SPEED
DATE
IC161
IC101
IC162
CN101
CN102
CN903
Q904
Q108
Q109
Q110
Q113
Q114
Q116
Q117
Q118
Q119
D105
1-631-166-
22
(CHASSIS)
A
B
C
D
E
F
G
H
I
J
K
L
1
2
3
4
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6
7
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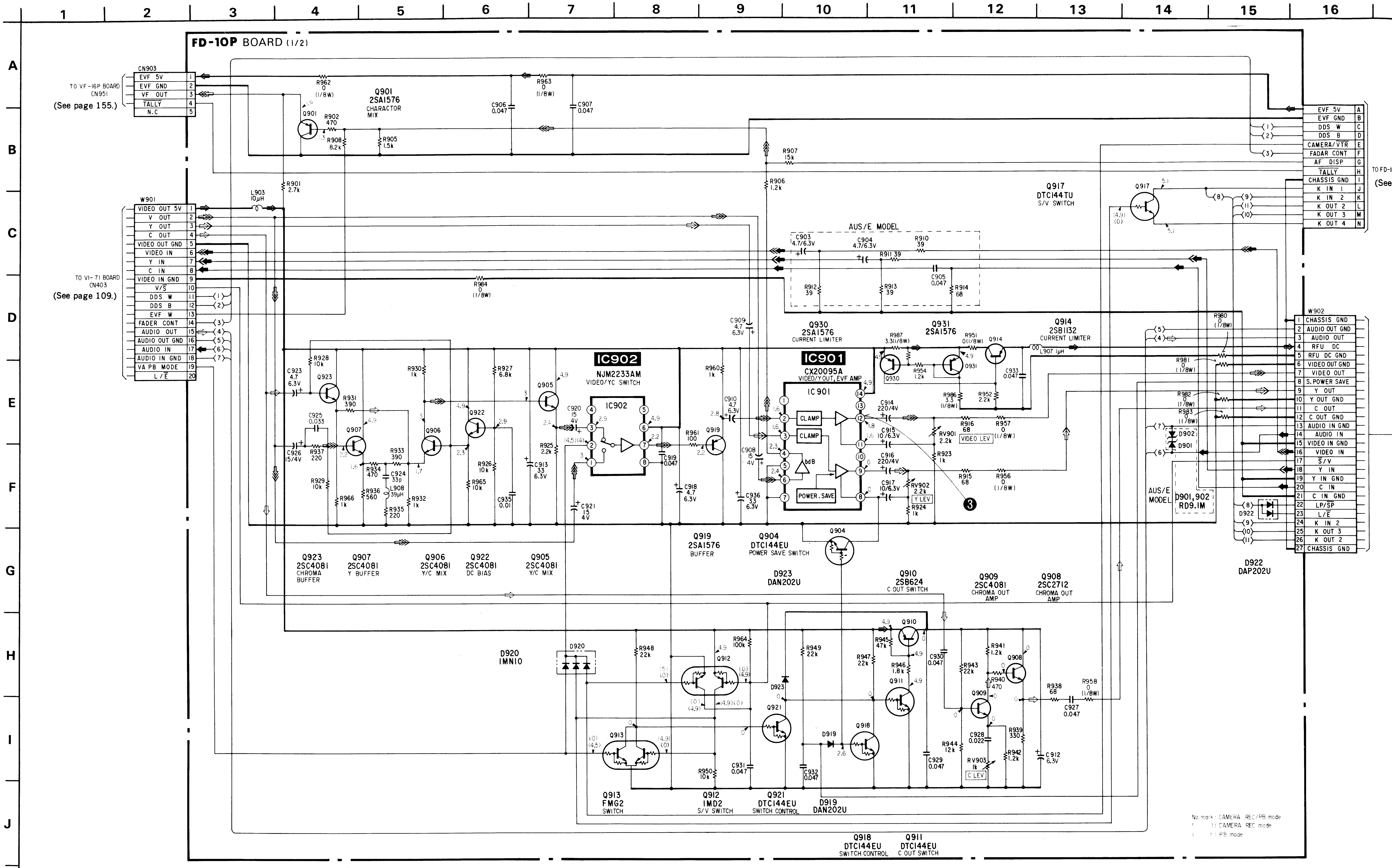
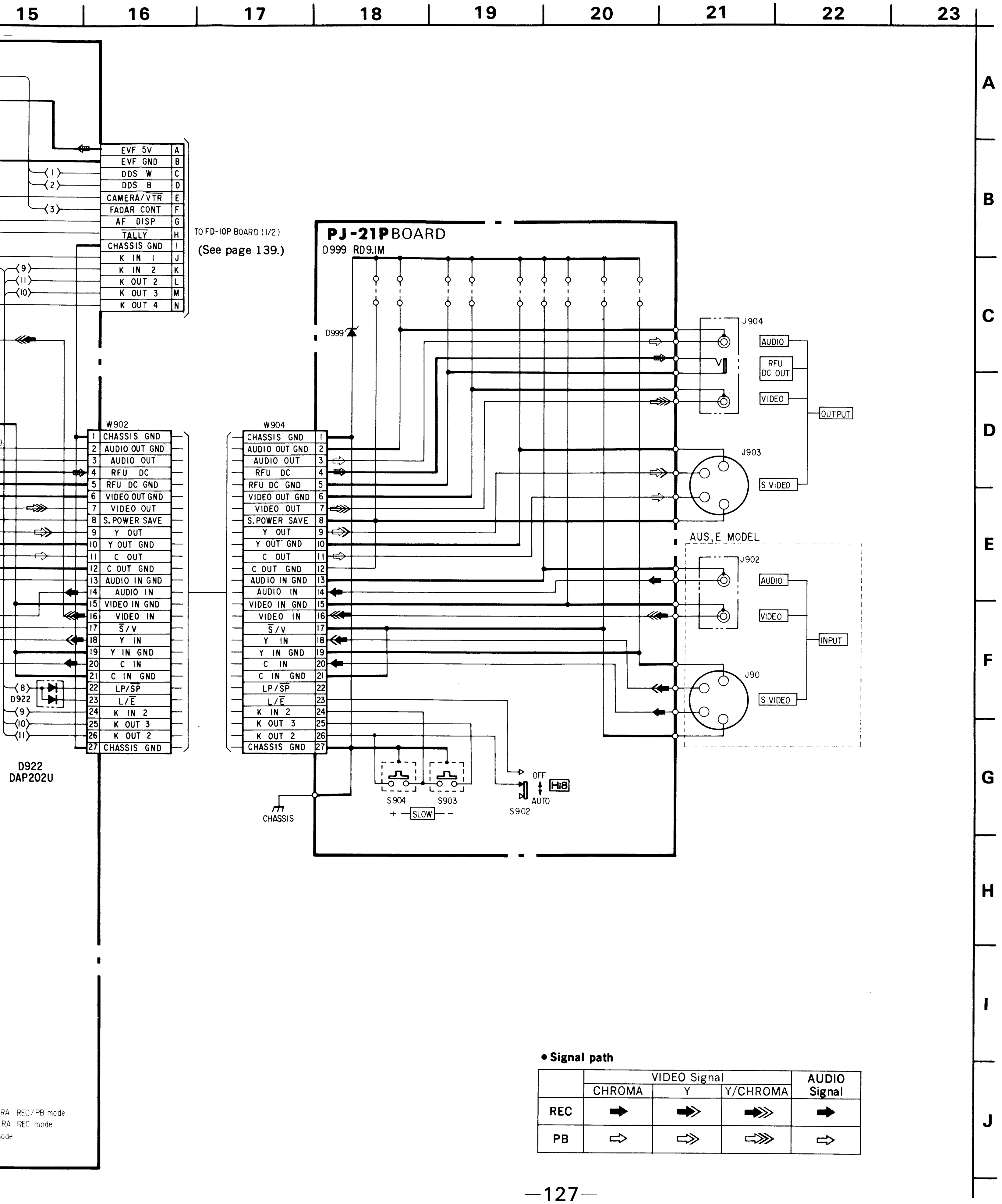
15

FD-10P (VIDEO AMP), PJ-21P (IN/OUT TERMINAL) SCHEMATIC DIAGRAM

—Ref. No. FD-10P BOARD: 4000 series, PJ-21P BOARD: 5000 series—


FD-10P BOARD (1/2)
CN903
EVF 5V
EVF GND
VF OUT
TALLY
N.C
TO VF-16P BOARD CN951
(See page 155.)
W901
VIDEO OUT 5V
V OUT
Y OUT
C OUT
VIDEO OUT GND
VIDEO IN
Y IN
C IN
VIDEO IN GND
V/S
DDS W
DDS B
EVF W
FADER CONT
AUDIO OUT
AUDIO OUT GND
AUDIO IN
AUDIO IN GND
VA PB MODE
L/E
TO VI-71 BOARD CN403
(See page 109.)
Q901 2SA1576 CHARACTOR MIX
IC902 NJM2233AM VIDEO/YC SWITCH
IC901 CX20095A VIDEO/Y OUT, EVF AMP
CLAMP
POWER. SAVE
AUS/E MODEL
Q930 2SA1576 CURRENT LIMITER
Q931 2SA1576
Q914 2SB1132 CURRENT LIMITER
Q917 DTC144TU S/V SWITCH
VIDEO LEV
Y LEV
C LEV
Q923 2SC4081 CHROMA BUFFER
Q907 2SC4081 Y BUFFER
Q906 2SC4081 Y/C MIX
Q922 2SC4081 DC BIAS
Q905 2SC4081 Y/C MIX
Q919 2SA1576 BUFFER
Q904 DTC144EU POWER SAVE SWITCH
D923 DAN202U
Q910 2SB624 C OUT SWITCH
Q909 2SC4081 CHROMA OUT AMP
Q908 2SC2712 CHROMA OUT AMP
D922 DAP202U
D920 IMN10
Q913 FMG2 SWITCH
Q912 IMD2 S/V SWITCH
Q921 DTC144EU SWITCH CONTROL
D919 DAN202U
Q918 DTC144EU SWITCH CONTROL
Q911 DTC144EU C OUT SWITCH
AUS/E MODEL D901, 902 RD9.1M
W902
CHASSIS GND
AUDIO OUT GND
AUDIO OUT
RFU DC
RFU DC GND
VIDEO OUT GND
VIDEO OUT
S.POWER SAVE
Y OUT
Y OUT GND
C OUT
C OUT GND
AUDIO IN GND
AUDIO IN
VIDEO IN GND
VIDEO IN
S/V
Y IN
Y IN GND
C IN
C IN GND
LP/SP
L/E
K IN 2
K OUT 3
K OUT 2
CHASSIS GND
EVF 5V
EVF GND
DDS W
DDS B
CAMERA/VTR
FADAR CONT
AF DISP
TALLY
CHASSIS GND
K IN 1
K IN 2
K OUT 2
K OUT 3
K OUT 4
TO FD-
(See
No mark : CAMERA REC/PB mode
( ) : CAMERA REC mode
( ) : PB mode

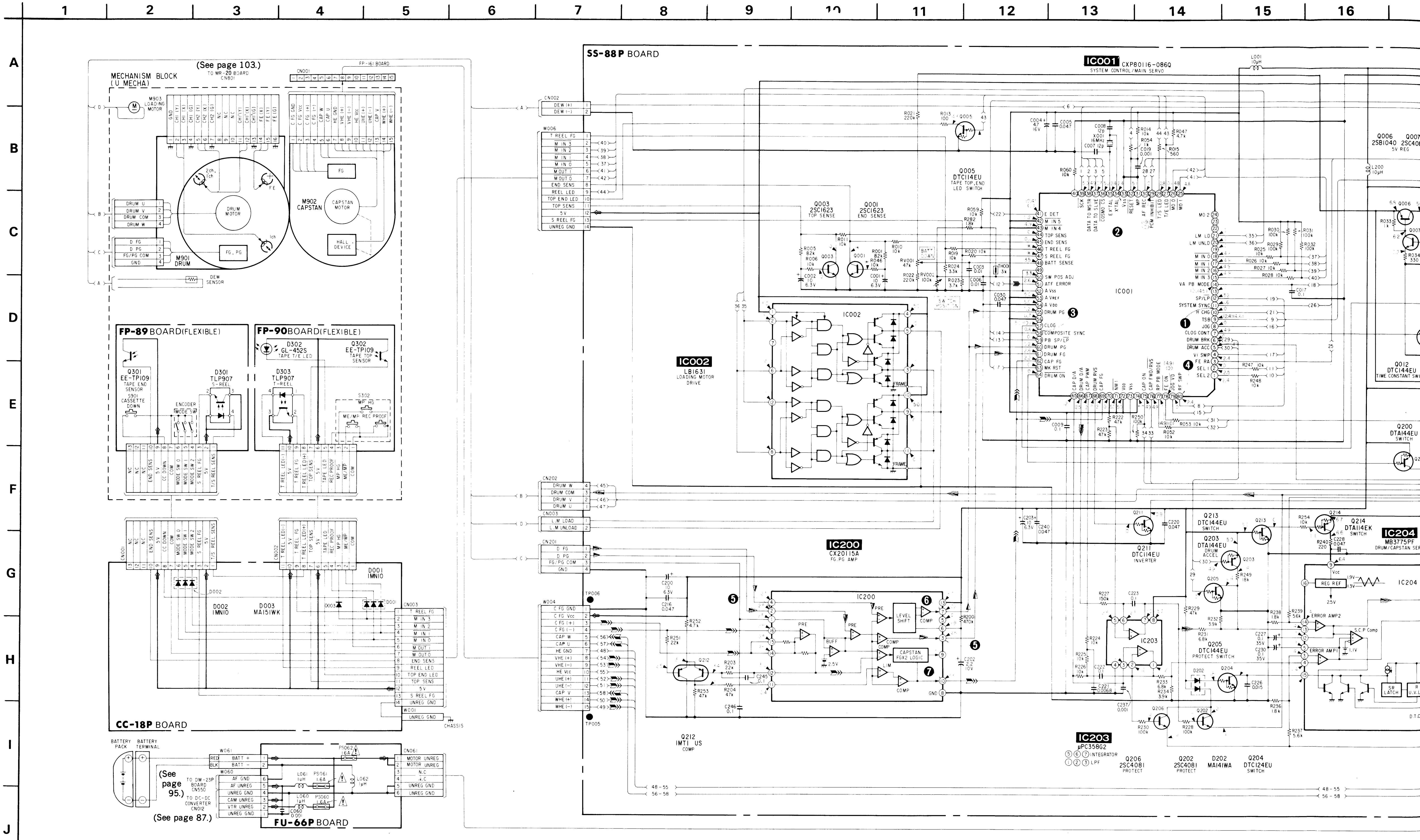

15
16
17
18
19
20
21
22
23
A
B
C
D
E
F
G
H
I
J
EVF 5V A
EVF GND B
DDS W C
DDS B D
CAMERA/VTR E
FADAR CONT F
AF DISP G
TALLY H
CHASSIS GND I
K IN 1 J
K IN 2 K
K OUT 2 L
K OUT 3 M
K OUT 4 N
(1)
(2)
(3)
(9)
(11)
(10)
TO FD-10P BOARD (1/2)
(See page 139.)
PJ-21P BOARD
D999 RD9.1M
D999
J904
AUDIO
RFU DC OUT
VIDEO
OUTPUT
J903
S VIDEO
AUS,E MODEL
J902
AUDIO
VIDEO
INPUT
J901
S VIDEO
W902
1 CHASSIS GND
2 AUDIO OUT GND
3 AUDIO OUT
4 RFU DC
5 RFU DC GND
6 VIDEO OUT GND
7 VIDEO OUT
8 S.POWER SAVE
9 Y OUT
10 Y OUT GND
11 C OUT
12 C OUT GND
13 AUDIO IN GND
14 AUDIO IN
15 VIDEO IN GND
16 VIDEO IN
17 S/V
18 Y IN
19 Y IN GND
20 C IN
21 C IN GND
22 LP/SP
23 L/E
24 K IN 2
25 K OUT 3
26 K OUT 2
27 CHASSIS GND
W904
CHASSIS GND 1
AUDIO OUT GND 2
AUDIO OUT 3
RFU DC 4
RFU DC GND 5
VIDEO OUT GND 6
VIDEO OUT 7
S.POWER SAVE 8
Y OUT 9
Y OUT GND 10
C OUT 11
C OUT GND 12
AUDIO IN GND 13
AUDIO IN 14
VIDEO IN GND 15
VIDEO IN 16
S/V 17
Y IN 18
Y IN GND 19
C IN 20
C IN GND 21
LP/SP 22
L/E 23
K IN 2 24
K OUT 3 25
K OUT 2 26
CHASSIS GND 27
(8)
D922
(9)
(10)
(11)
D922
DAP202U
CHASSIS
S904
S903
+ SLOW −
OFF
Hi8
AUTO
S902
RA REC/PB mode
RA REC mode
ode

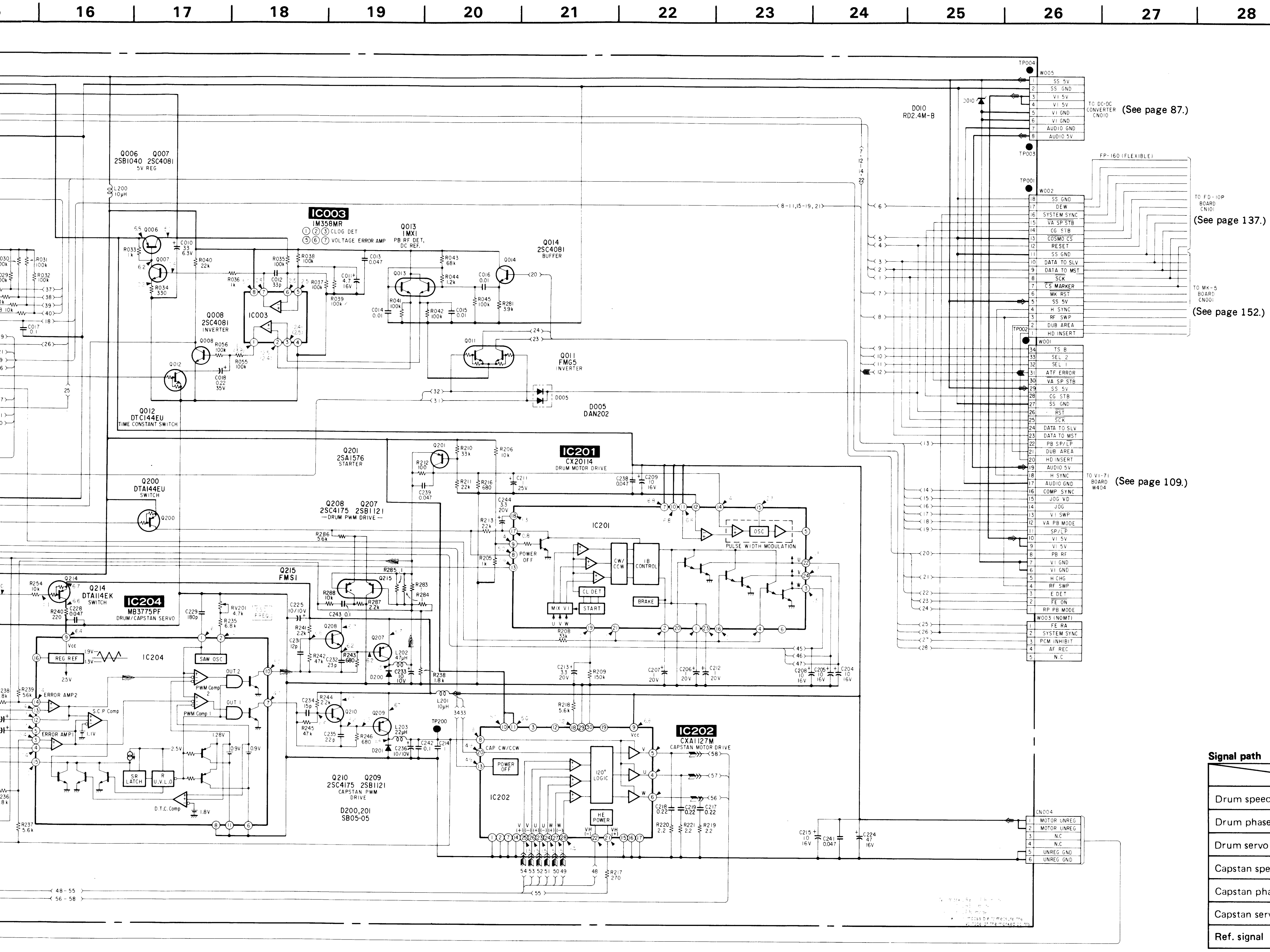
• Signal path

	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC	➡	➡≫	➡≫≫	➡
PB	⇨	⇨>	⇨≫	⇨

SS-88P (SERVO, SYSTEM CONTROL) FP-89 (MODE SW, SENSOR), FP-90 (TAPE SELECT SW, SENSOR), FU-66P (BATTERY TERMINAL), CC-18P (RELAY) SCHEMATIC DIAGRAM

—Ref. No. SS-88P BOARD: 1000 series, FP-89 and FP-90 BOARDS: 2000 series, FU-66P and CC-18P BOARDS: 3000 series—


MECHANISM BLOCK (U MECHA)
(See page 103.)
TO MR-20 BOARD CN801
FP-161 BOARD
M903 LOADING MOTOR
M902 CAPSTAN
M901 DRUM
DRUM MOTOR
CAPSTAN MOTOR
HALL DEVICE
FG, PG
DEW SENSOR
FP-89 BOARD(FLEXIBLE)
FP-90 BOARD(FLEXIBLE)
Q301 EE-TP109 TAPE END SENSOR
S901 CASSETTE DOWN
ENCODER (MODE SW)
D301 TLP907 S-REEL
D302 GL-452S TAPE T/E LED
Q302 EE-TP109 TAPE TOP SENSOR
D303 TLP907 T-REEL
S302 MP HG ME/MP REC PROOF
CC-18P BOARD
D001 IMN10
D002 IMN10
D003 MA151WK
CHASSIS
BATTERY PACK
BATTERY TERMINAL
(See page 95.)
TO DM-23P BOARD CN550
TO DC-DC CONVERTER CN012
(See page 87.)
FU-66P BOARD
PS061 1.6A
PS062 1.6A
PS060 1.6A
L061 1µH
L062 1µH
L060 1µH
SS-88P BOARD
IC001 CXP80116-086Q SYSTEM CONTROL/MAIN SERVO
IC002 LB1631 LOADING MOTOR DRIVE
IC200 CX20115A FG,PG AMP
IC203 µPC358G2 ⑤⑥⑦ INTEGRATOR ①②③ LPF
IC204 MB3775PF DRUM/CAPSTAN SER
Q001 2SC1623 END SENSE
Q003 2SC1623 TOP SENSE
Q005 DTC114EU TAPE TOP,END LED SWITCH
Q006 2SB1040
Q007 2SC40
5V REG
Q012 DTC144EU TIME CONSTANT SW
Q200 DTA144EU SWITCH
Q202 2SC4081 PROTECT
Q203 DTA144EU DRUM ACCEL
Q204 DTC124EU SWITCH
Q205 DTC144EU PROTECT SWITCH
Q206 2SC4081 PROTECT
Q211 DTC114EU INVERTER
Q212 IMT1 US COMP
Q213 DTC144EU SWITCH
Q214 DTA114EK SWITCH
D202 MA141WA
X001 16MHz
CN001 CN002 CN003 CN061 CN200 CN201 CN202
W004 W006 W001 W060 W061
TP005 TP006
48–55
56–58


16
17
18
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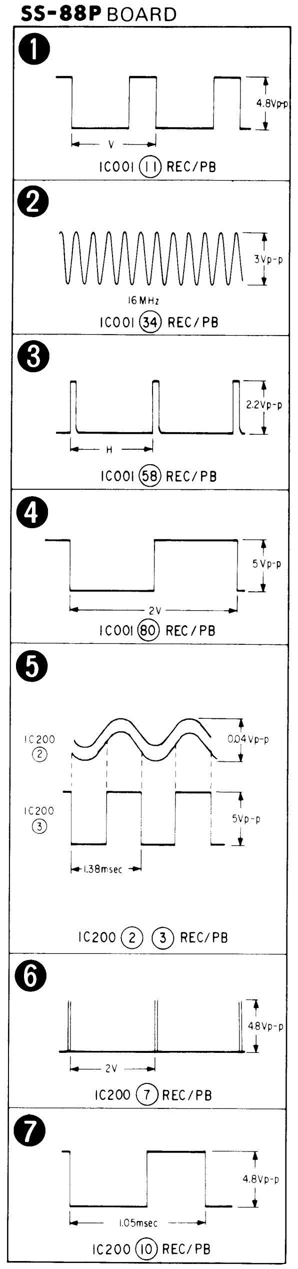
21
22
23
24
25
26
27
28
29
30
31
A
B
C
D
E
F
G
H
I
J
Q006 Q007
2SB1040 2SC4081
5V REG
L200 10μH
IC003
IM358MR
①②③ CLOG DET
⑤⑥⑦ VOLTAGE ERROR AMP
Q013
IMX1
PB RF DET, DC REF.
Q014
2SC4081
BUFFER
Q008
2SC4081
INVERTER
Q011
FMG5
INVERTER
Q012
DTC144EU
TIME CONSTANT SWITCH
D005
DAN202
D010
RD2.4M-B
TP004
W005
SS 5V
SS GND
VI 5V
VI 5V
VI GND
VI GND
AUDIO GND
AUDIO 5V
TO DC-DC CONVERTER CN010
(See page 87.)
TP003
FP-160 (FLEXIBLE)
TP001
W002
SS GND
DEW
SYSTEM SYNC
VA SP STB
CG STB
COSMO CS
RESET
SS GND
DATA TO SLV
DATA TO MST
SCK
CS MARKER
MK RST
SS 5V
H SYNC
RF SWP
DUB AREA
HD INSERT
TO FD-10P BOARD CN101
(See page 137.)
TO MK-5 BOARD CN001
(See page 152.)
TP002
W001
TS B
SEL 2
SEL 1
ATF ERROR
VA SP STB
SS 5V
CG STB
SS GND
RST
SCK
DATA TO SLV
DATA TO MST
PB SP/LP
DUB AREA
HD INSERT
AUDIO 5V
H SYNC
AUDIO GND
COMP SYNC
JOG VD
JOG
VI SWP
VA PB MODE
SP/LP
VI 5V
VI 5V
PB RF
VI GND
VI GND
H CHG
RF SWP
E DET
FE ON
RP PB MODE
TO VI-71 BOARD W404
(See page 109.)
W003 (NOMT)
FE RA
SYSTEM SYNC
PCM INHIBIT
AF REC
N.C
Q201
2SA1576
STARTER
IC201
CX20114
DRUM MOTOR DRIVE
Q200
DTA144EU
SWITCH
Q208 Q207
2SC4175 2SB1121
—DRUM PWM DRIVE—
POWER OFF
CW/CCW
IB CONTROL
CL DET
START
BRAKE
MIX VI
OSC
PULSE WIDTH MODULATION
Q215
FMS1
Q214
DTA114EK
SWITCH
IC204
MB3775PF
DRUM/CAPSTAN SERVO
REG REF
SAW OSC
OUT 2
OUT 1
PWM Comp 2
PWM Comp 1
ERROR AMP2
ERROR AMP1
S.C.P Comp
SR LATCH
U.V.L.O
D.T.C.Comp
IC202
CXA1127M
CAPSTAN MOTOR DRIVE
CAP CW/CCW
POWER OFF
120° LOGIC
HE POWER
Q210 Q209
2SC4175 2SB1121
CAPSTAN PWM DRIVE
D200,201
SB05-05
TP200
CN004
MOTOR UNREG
MOTOR UNREG
N.C
N.C
UNREG GND
UNREG GND


SS-88P BOARD
❶
4.8Vp-p
V
IC001 ⑪ REC/PB
❷
3Vp-p
16MHz
IC001 ㉞ REC/PB
❸
2.2Vp-p
H
IC001 (58) REC/PB
❹
5Vp-p
2V
IC001 (80) REC/PB
❺
IC200 ②
0.04Vp-p
IC200 ③
5Vp-p
1.38msec
IC200 ② ③ REC/PB
❻
4.8Vp-p
2V
IC200 ⑦ REC/PB
❼
4.8Vp-p
1.05msec
IC200 ⑩ REC/PB

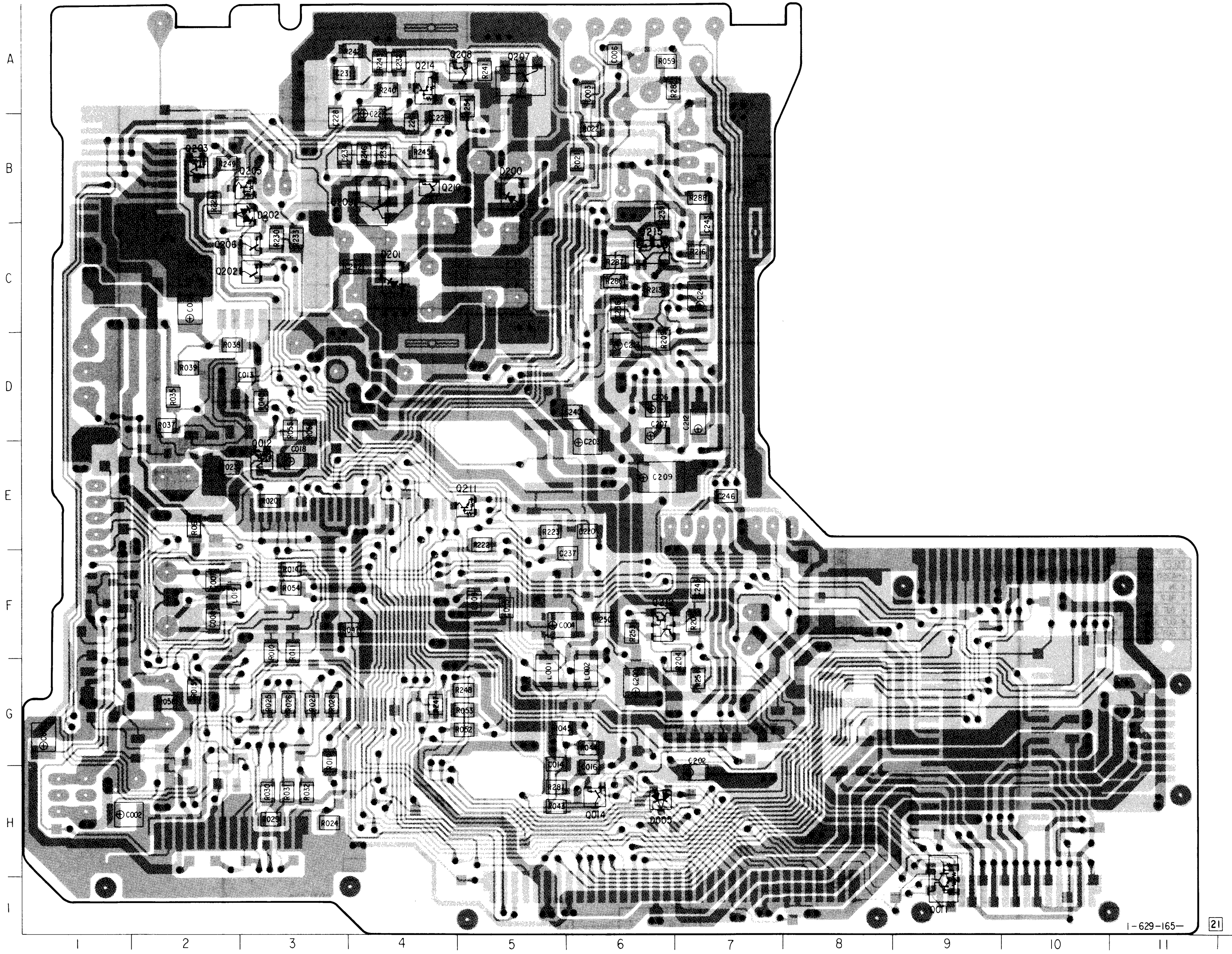
Signal path

	REC	REC/PB	PB
Drum speed servo		▶	
Drum phase servo		▶▶	
Drum servo (speed and phase)		▶▶▶	
Capstan speed servo		▷	
Capstan phase servo		▷▷	
Capstan servo (speed and phase)		▷▷▷	
Ref. signal	➧		

SS-88P (SERVO, SYSTEM CONTROL) FP-89 (MODE SW, SENSOR), FP-90 (TAPE SELECT SW, SENSOR), FU-66P (BATTERY TERMINAL), CC-18P (RELAY) PRINTED WIRING BOARDS

—Ref. No. SS-88P BOARD : 1000 series, FP-89 and FP-90 BOARDS : 2000 series, FU-66P and CC-18P BOARDS : 3000 series—

SS-88P BOARD(COMPONENT SIDE)


A
B
C
D
E
F
G
H
I
1
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3
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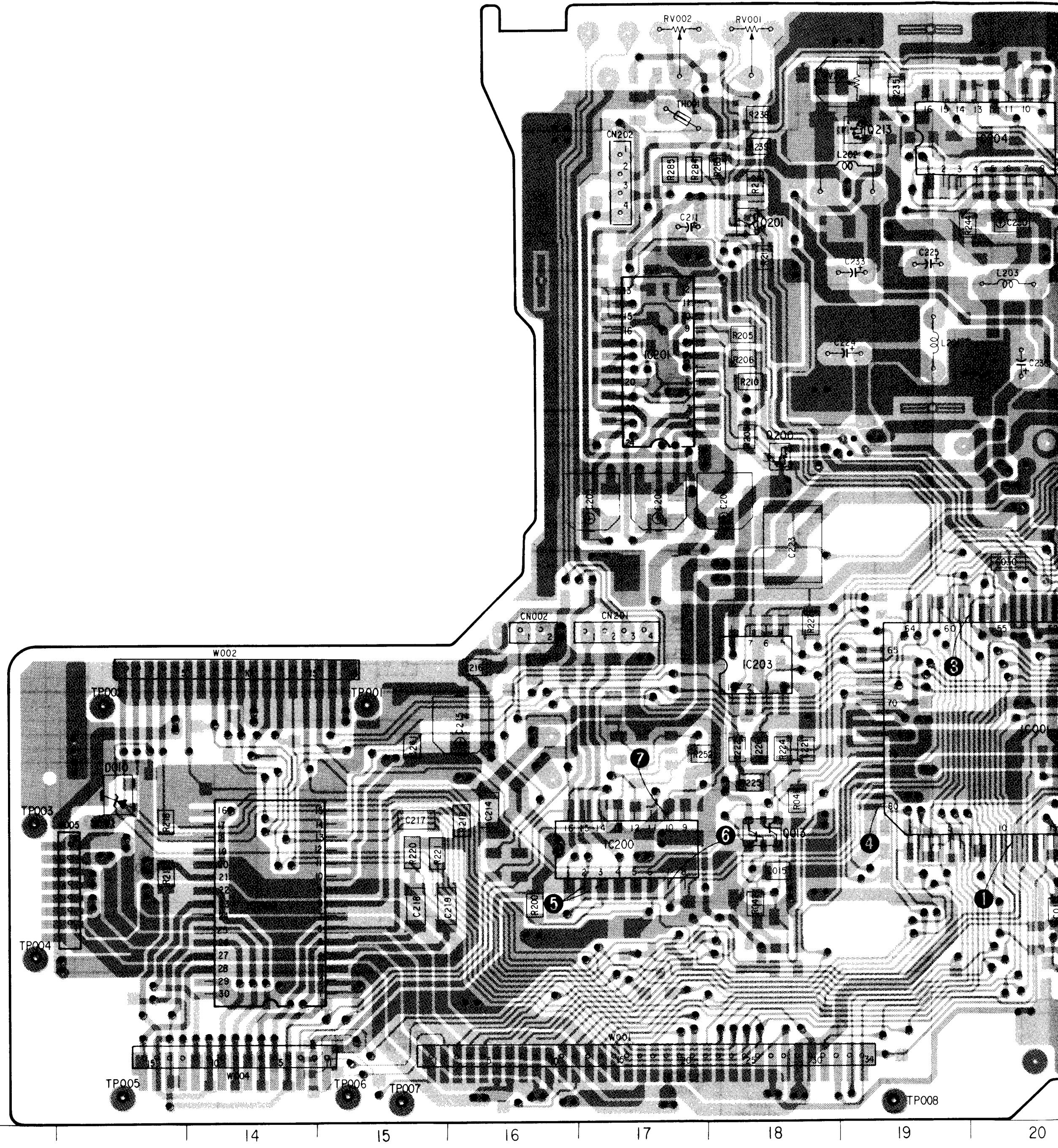
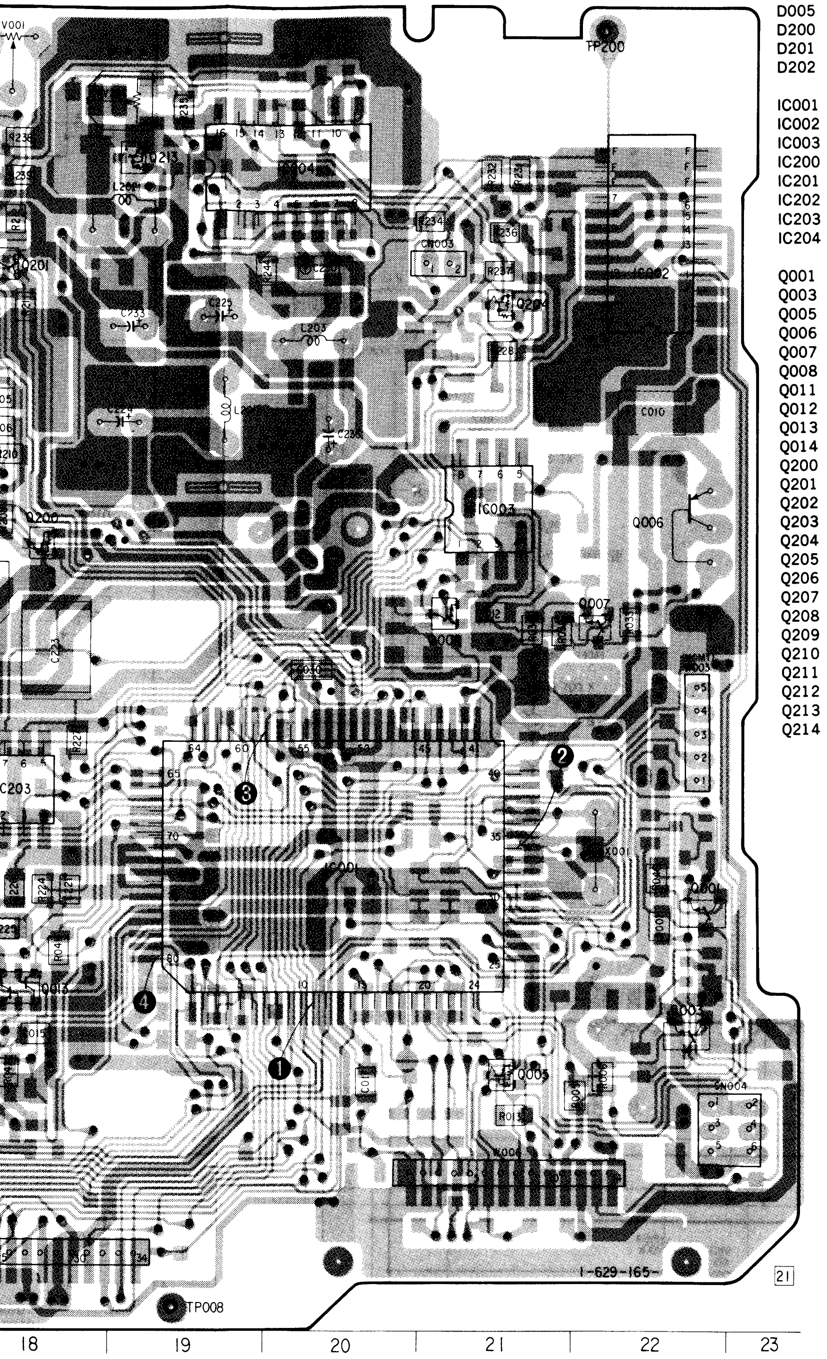
6
7
8
9
10
11
12
Q214
Q208
Q207
Q203
Q205
Q202
Q206
Q202
Q201
Q200
Q212
Q211
Q014
D003
C209
C202
1-629-165-
21

SS-88P BOARD (COMPONENT SIDE)

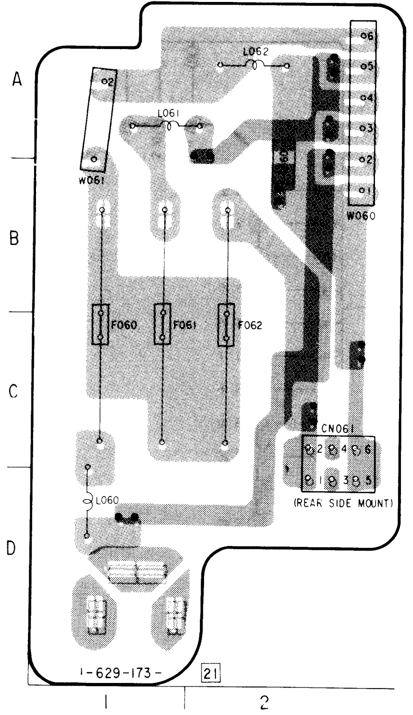

RV002
RV001
CN202
CN002
CN201
W002
W001
W004
IC203
IC200
TP001
TP002
TP003
TP004
TP005
TP006
TP007
TP008
Q201
Q200
Q213
L203
14
15
16
17
18
19
20

SIDE)

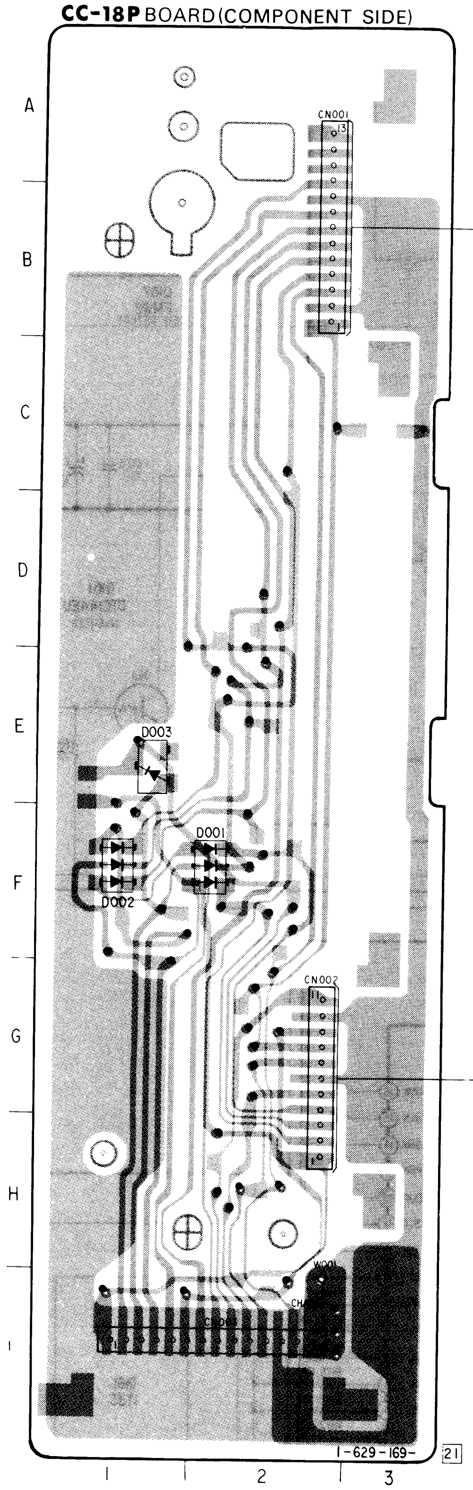

TP200
TP008
IC003
Q006
IC002
1-629-165-
21
18
19
20
21
22
23

D005	H-6
D200	B-5
D201	C-4
D202	C-3
IC001	F-20
IC002	B-22
IC003	D-21
IC200	G-17
IC201	C-17
IC202	G-14
IC203	F-18
IC204	A-20
Q001	F-22
Q003	G-22
Q005	G-21
Q006	D-22
Q007	D-22
Q008	D-21
Q011	I-9
Q012	E-3
Q013	G-18
Q014	H-6
Q200	D-18
Q201	B-18
Q202	C-2
Q203	B-2
Q204	B-21
Q205	B-3
Q206	C-2
Q207	A-5
Q208	A-5
Q209	B-4
Q210	B-5
Q211	E-5
Q212	F-6
Q213	A-4
Q214	A-4

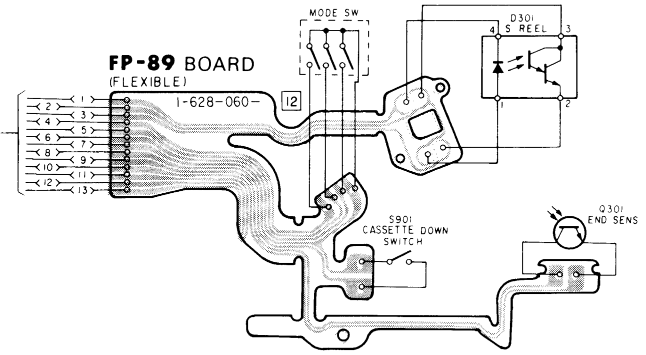
FU-66P BOARD (COMPONENT SIDE)


A
B
C
D
L062
L061
W061
W060
F060
F061
F062
CN061
(REAR SIDE MOUNT)
L060
1-629-173-
21
1
2

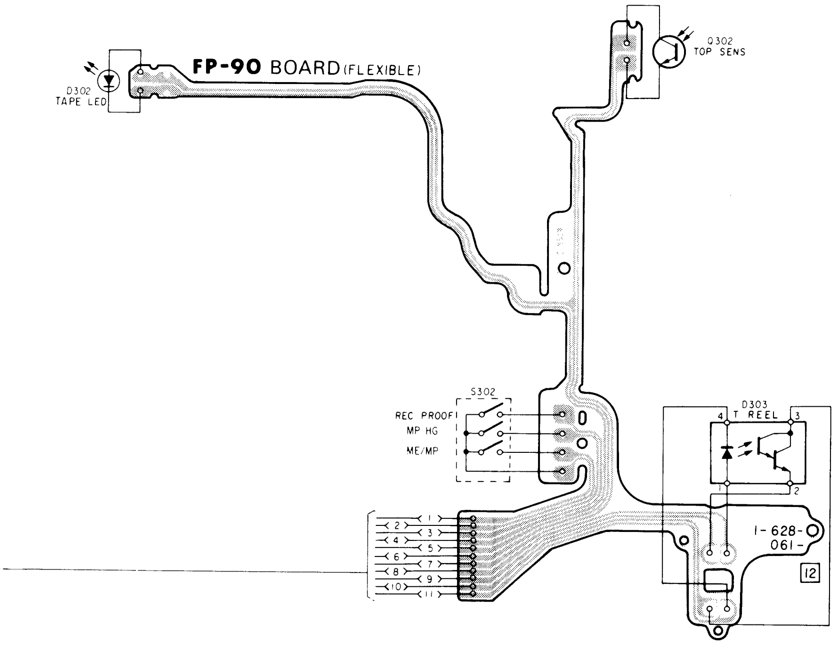
CC-18P BOARD (COMPONENT SIDE)


A
B
C
D
E
F
G
H
I
CN001
D003
D001
D002
CN002
W001
1-629-169-
21
1
2
3

FP-89 BOARD (FLEXIBLE)

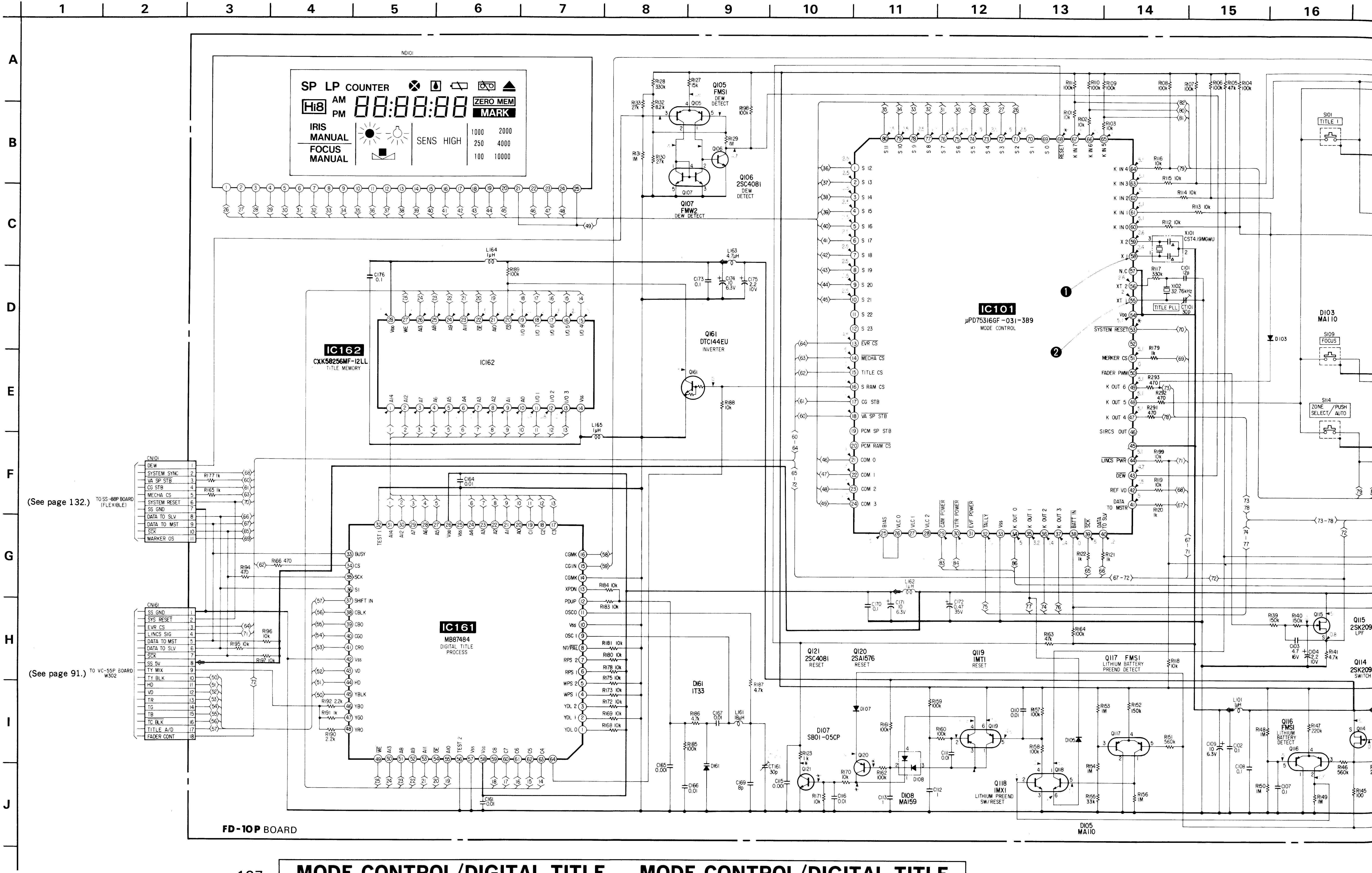

MODE SW
D301 S REEL
1-628-060-
12
S901 CASSETTE DOWN SWITCH
Q301 END SENS

FP-90 BOARD (FLEXIBLE)


D302 TAPE LED
Q302 TOP SENS
S302
REC PROOF
MP HG
ME/MP
D303 T REEL
1-628-061-
12

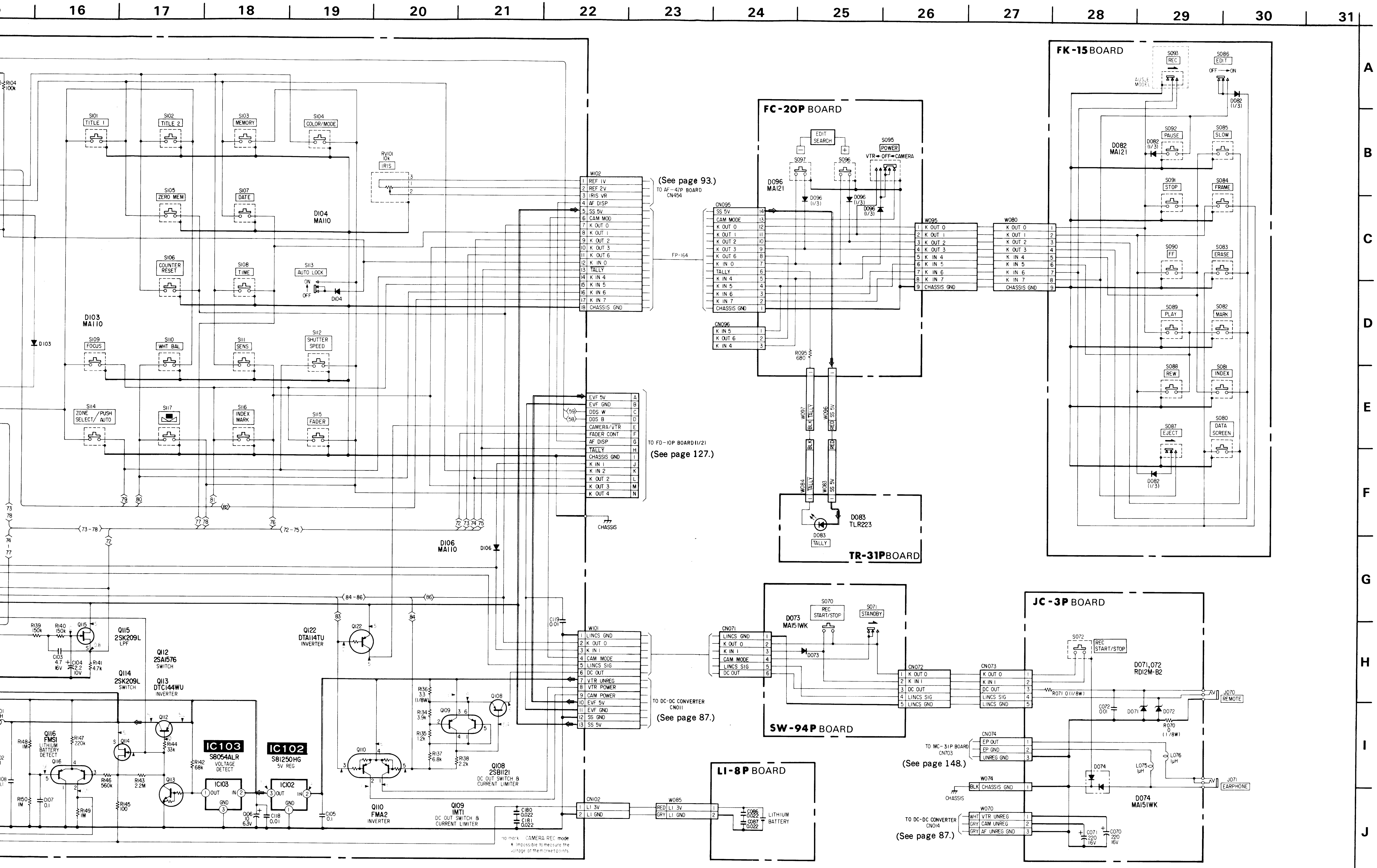
FD-10P (MODE CONTROL, DIGITAL TITLE), FC-20P (EDIT SERCH/POWER SW), TR-31P (LED), SW-94P (REC/STANDBY SW), LI-8P (LITHIUM BATTERY), FK-15 (FUNCTION SW), JC-3P (EXT JACK) SCHEMATIC DIAGRAM

—Ref. No. FD-10P and SW-94P BOARDS : 1000 series, TR-31P and JC-3P BOARDS : 5000 series, FK-15 BOARD : 6000 series, FC-20P BOARD : 7000 series, LI-8P BOARD : 8000 series—



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
ND101
SP LP COUNTER
Hi8 AM PM
88:88:88
ZERO MEM
MARK
IRIS MANUAL
FOCUS MANUAL
SENS HIGH
1000 2000
250 4000
100 10000
Q105 FMS1 DEW DETECT
Q106 2SC4081 DEW DETECT
Q107 FMW2 DEW DETECT
IC101
μPD75316GF-031-3B9
MODE CONTROL
X101 CST4.19MGWU
X102 32.76kHz
TITLE PLL
CT101 30p
IC162
CXK58256MF-12LL
TITLE MEMORY
Q161 DTC144EU INVERTER
IC161
MB87484
DIGITAL TITLE PROCESS
CN101
(See page 132.) TO SS-88P BOARD (FLEXIBLE)
DEW
SYSTEM SYNC
VA SP STB
CG STB
MECHA CS
SYSTEM RESET
SS GND
DATA TO SLV
DATA TO MST
SCK
MARKER OS
CN161
(See page 91.) TO VC-55P BOARD W302
SS GND
SYS RESET
EVR CS
LINCS SIG
DATA TO MST
DATA TO SLV
SCK
SS 5V
TY MIX
TY BLK
HD
VD
TR
TG
TB
TC BLK
TITLE A/D
FADER CONT
D161 1T33
Q121 2SC4081 RESET
Q120 2SA1576 RESET
Q119 IMT1 RESET
Q117 FMS1 LITHIUM BATTERY PREEND DETECT
Q118 IMX1 LITHIUM PREEND SW/RESET
D107 SB01-05CP
D108 MA159
D105 MA110
D103 MA110
S101 TITLE I
S109 FOCUS
S114 ZONE SELECT/PUSH AUTO
Q115 2SK209 LPF
Q114 2SK209 SWITCH
Q116 FMS1 LITHIUM BATTERY DETECT
FD-10P BOARD

MODE CONTROL/DIGITAL TITLE MODE CONTROL/DIGITAL TITLE

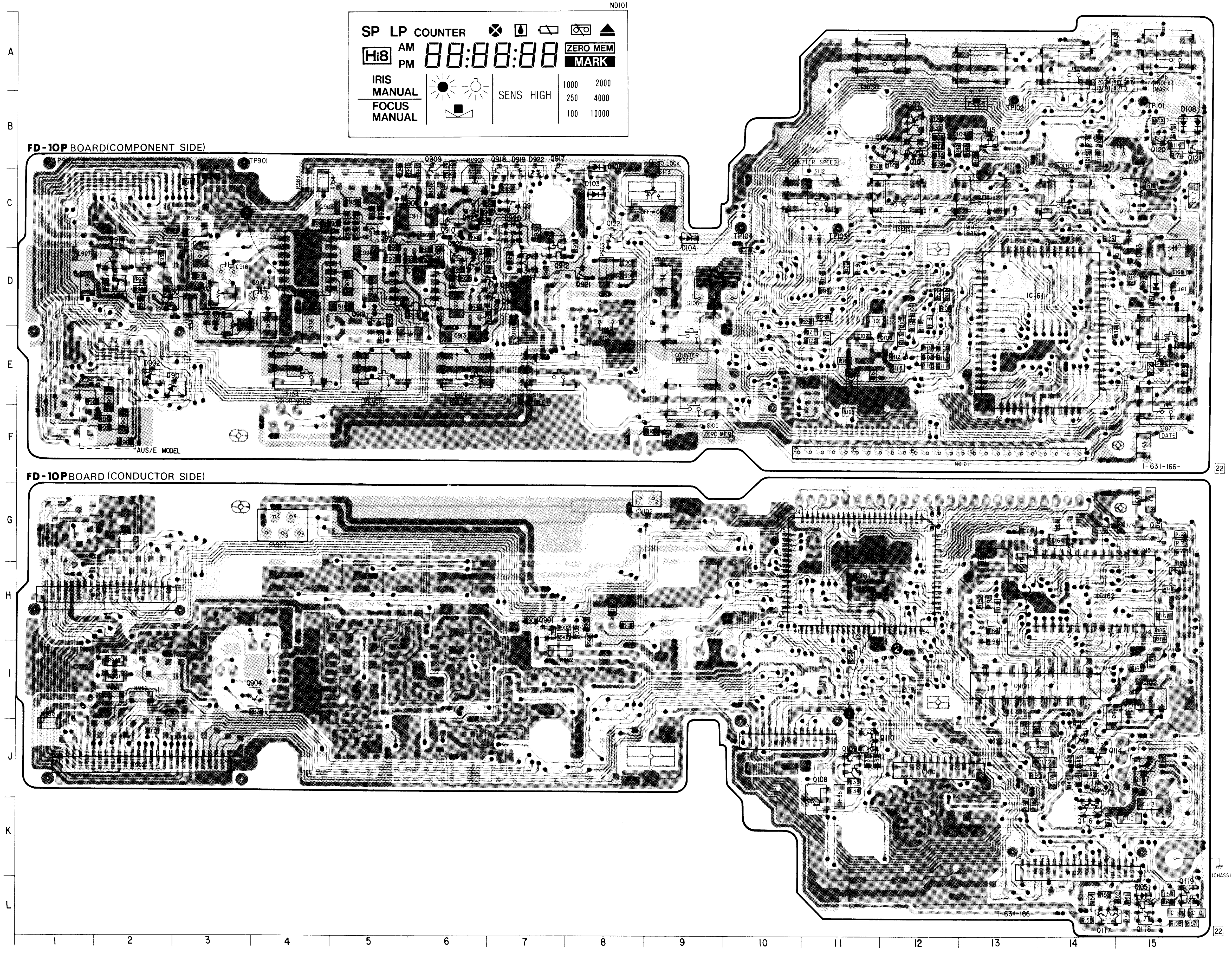

16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
A
B
C
D
E
F
G
H
I
J
FK-15 BOARD
FC-20P BOARD
TR-31P BOARD
SW-94P BOARD
JC-3P BOARD
LI-8P BOARD
S101 TITLE 1
S102 TITLE 2
S103 MEMORY
S104 COLOR/MODE
S105 ZERO MEM
S107 DATE
S106 COUNTER RESET
S108 TIME
S113 AUTO LOCK
S109 FOCUS
S110 WHT BAL
S111 SENS
S112 SHUTTER SPEED
S114 ZONE/PUSH SELECT/AUTO
S117
S116 INDEX MARK
S115 FADER
RV101 10k IRIS
D104 MA110
D103 MA110
D106 MA110
W102
REF 1V
REF 2V
IRIS VR
AF DISP
SS 5V
CAM MOD
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 6
K IN 0
TALLY
K IN 4
K IN 5
K IN 6
K IN 7
CHASSIS GND
(See page 93.)
TO AF-47P BOARD CN454
EVF 5V
EVF GND
DDS W
DDS B
CAMERA/VTR
FADER CONT
AF DISP
TALLY
CHASSIS GND
K IN 1
K IN 2
K OUT 2
K OUT 3
K OUT 4
TO FD-10P BOARD(1/2)
(See page 127.)
FP-164
CN095
CN096
S097
S096
EDIT SEARCH
S095 POWER
VTR ← OFF → CAMERA
D096 MA121
R095 680
W097 BLK TALLY
W096 RED SS 5V
W084 TALLY
W083 SS 5V
D083 TLR223
D083 TALLY
W095
W080
S093 REC
AUS.E MODEL
S086 EDIT
OFF → ON
D082 (1/3)
D082 MA121
S092 PAUSE
S085 SLOW
S091 STOP
S084 FRAME
S090 FF
S083 ERASE
S089 PLAY
S082 MARK
S088 REW
S081 INDEX
S087 EJECT
S080 DATA SCREEN
CHASSIS
W101
LINCS GND
CAM MODE
LINCS SIG
DC OUT
VTR UNREG
VTR POWER
CAM POWER
EVF 5V
EVF GND
SS GND
SS 5V
TO DC-DC CONVERTER CN011
(See page 87.)
CN071
S070 REC START/STOP
S071 STANDBY
D073 MA151WK
CN072
CN073
S072 REC START/STOP
D071,072 RD12M-B2
R071 0 (1/8W)
C072 0.01
R070 0 (1/8W)
L076 1μH
L075 1μH
J070 REMOTE
J071 EARPHONE
D074 MA151WK
CN074
EP OUT
EP GND
UNREG GND
TO MC-31P BOARD CN703
(See page 148.)
W074 BLK CHASSIS GND
W070
WHT VTR UNREG
GRY CAM UNREG
GRY AF UNREG GND
TO DC-DC CONVERTER CN014
(See page 87.)
C071 220 16V
C070 220 16V
CN102
L1 3V
L1 GND
W085
RED L1 3V
GRY L1 GND
C086 0.022
C087 0.022
LITHIUM BATTERY
Q115 2SK209L LPF
Q112 2SA1576 SWITCH
Q114 2SK209L SWITCH
Q113 DTC144WU INVERTER
Q116 FMS1 LITHIUM BATTERY DETECT
Q122 DTA114TU INVERTER
Q110 FMA2 INVERTER
Q109 IMT1 DC OUT SWITCH & CURRENT LIMITER
Q108 2SB1121 DC OUT SWITCH & CURRENT LIMITER
IC103 S8054ALR VOLTAGE DETECT
IC102 S81250HG 5V REG
R139 150k
R140 150k
C103 4.7 16V
C104 2.2 10V
R141 4.7k
R147 220k
R148 1M
R146 560k
R143 2.2M
R144 33k
R142 68k
R145 100
R150 1M
C107 0.1
R149 1M
C106 10 6.3V
C118 0.01
C105 0.1
C119 0.01
R136 3.3 (1/8W)
R134 3.9k
R135 1.2k
R137 6.8k
R138 2.2k
C180 0.022
C181 0.022
R104 100k
D103
D106
(73-78)
(72-75)
(84-86)
(86)
no mark : CAMERA REC mode
* : Impossible to measure the voltage at the marked points.

MODE CONTROL/DIGITAL TITLE

MODE CONTROL/DIGITAL TITLE

FD-10P (MODE CONTROL, DIGITAL TITLE), FC-20P (EDIT SERCH/POWER SW), TR-31P (LED), SW-94P (REC/STANDBY SW), LI-8P (LITHIUM BATTERY), FK-15 (FUNCTION SW), JC-3P (EXT JACK) PRINTED WIRING BOARDS

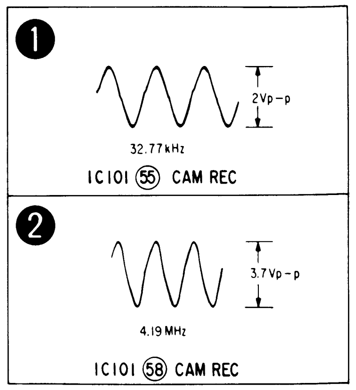
—Ref. No. FD-10P and SW-94P BOARDS : 1000 series, TR-31P and JC-3P BOARDS : 5000 series, FK-15 BOARD : 6000 series, FC-20P BOARD : 7000 series, LI-8P BOARD : 8000 series—



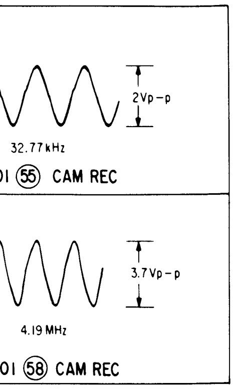
ND101
SP LP COUNTER
Hi8
AM
PM
88:88:88
ZERO MEM
MARK
IRIS
MANUAL
FOCUS
MANUAL
SENS HIGH
1000 2000
250 4000
100 10000
FD-10P BOARD(COMPONENT SIDE)
FD-10P BOARD (CONDUCTOR SIDE)
AUS/E MODEL
COUNTER RESET
ZERO MEM
DATE
SHUTTER SPEED
FOCUS
AUTO LOCK
1-631-166-
22
CHASSIS
A
B
C
D
E
F
G
H
I
J
K
L
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

D102	C-8
D104	D-9
D105	L-15
D107	J-15
D108	B-15
D161	D-15
D901	E-2
D902	E-2
D903	E-1
D904	G-1
D905	F-1
D906	F-1
D907	G-1
D908	G-1
D919	C-7
D920	C-7
D922	C-7
D923	C-6
IC101	H-11
IC102	I-15
IC103	C-15
IC161	D-13
IC162	H-14
IC901	D-4
IC902	D-6
Q105	B-12
Q106	B-12
Q107	B-12
Q108	K-11
Q109	J-11
Q110	J-11
Q112	J-14
Q113	J-14
Q114	J-14
Q115	B-13
Q116	K-14
Q117	L-14
Q118	L-15
Q119	L-15
Q120	B-15
Q121	B-15
Q122	C-8
Q161	G-15
Q901	I-7
Q904	I-4
Q905	D-7
Q906	D-7
Q907	C-5
Q908	C-6
Q909	C-6
Q910	C-6
Q911	C-7
Q912	D-7
Q913	D-7
Q914	D-2
Q915	I-2
Q917	C-7
Q918	C-7
Q919	E-5
Q921	D-8
Q922	D-6
Q923	D-6

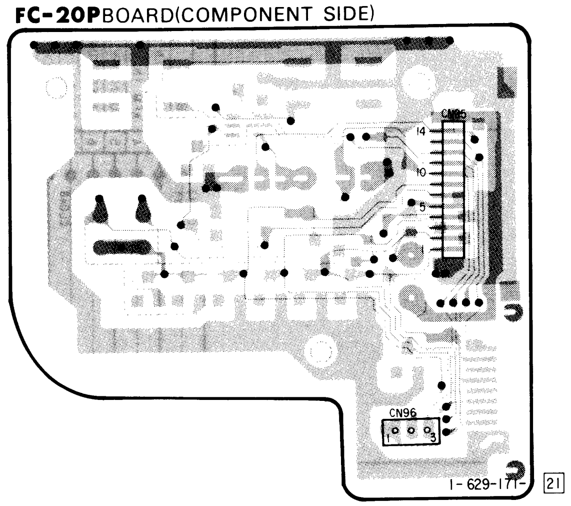
FD-10P BOARD



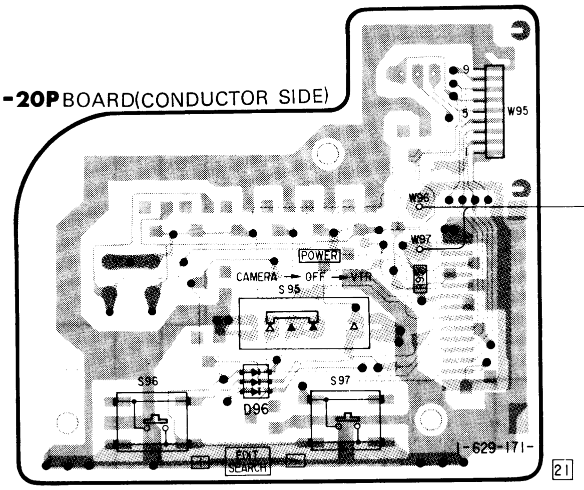
P BOARD



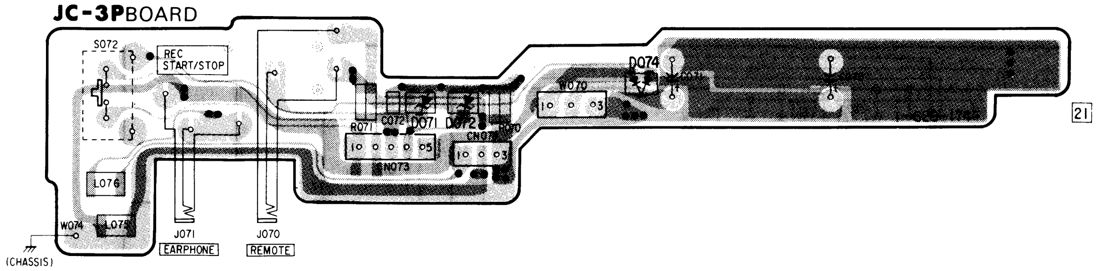
FC-20P BOARD(COMPONENT SIDE)


CN95
14
10
5
1
CN96
1-629-171-
21

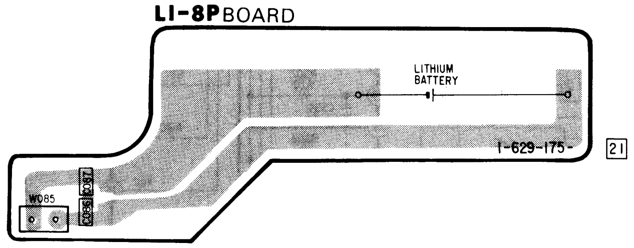
FC-20P BOARD(CONDUCTOR SIDE)


9
5
1
W95
W96
W97
POWER
CAMERA → OFF → VTR
S95
S96
S97
D96
EDIT SEARCH
1-629-171-
21

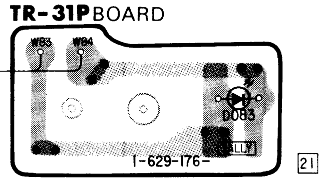
JC-3P BOARD


S072
REC START/STOP
D074
W070
R071
C072
D071
D072
CN073
CN07
L076
W074
L075
J071
EARPHONE
J070
REMOTE
(CHASSIS)
21

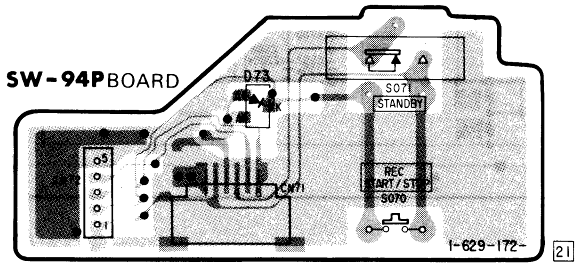
LI-8P BOARD


LITHIUM BATTERY
W085
1-629-175-
21

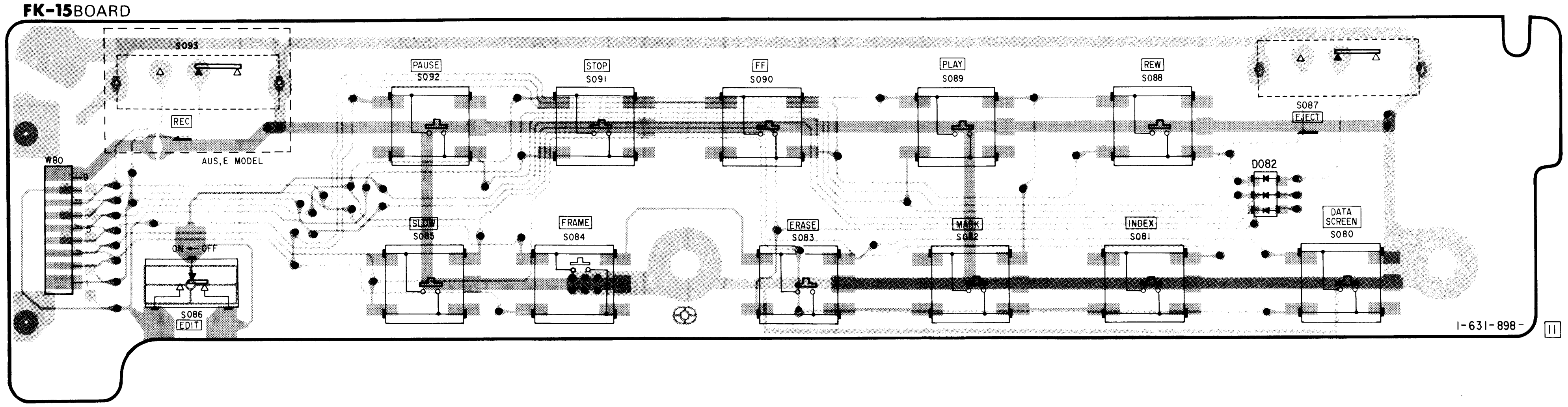
TR-31P BOARD

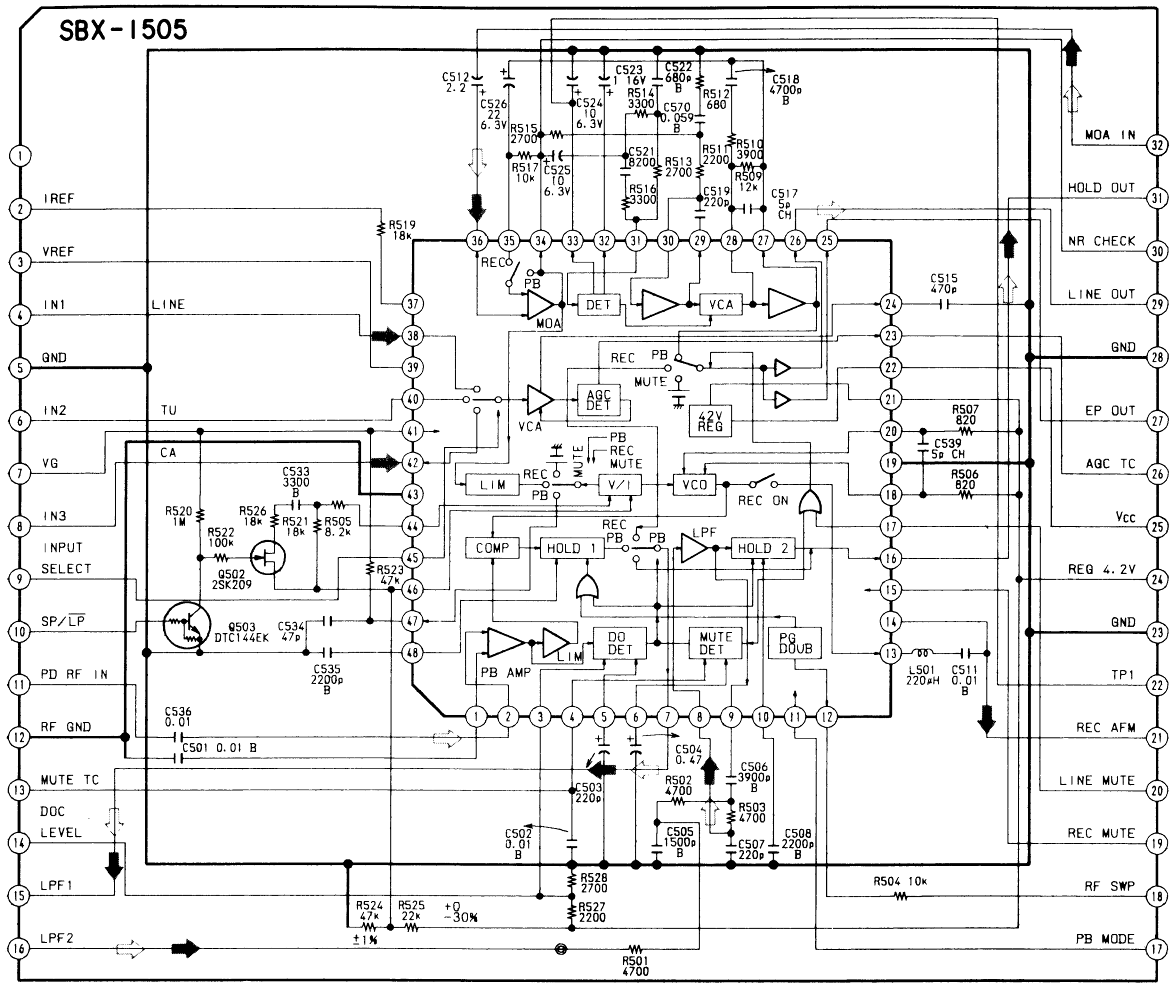

W83
W84
D083
TALLY
1-629-176-
21

SW-94P BOARD


D73
S071
STANDBY
REC START/STOP
S070
CN71
5
1
1-629-172-
21

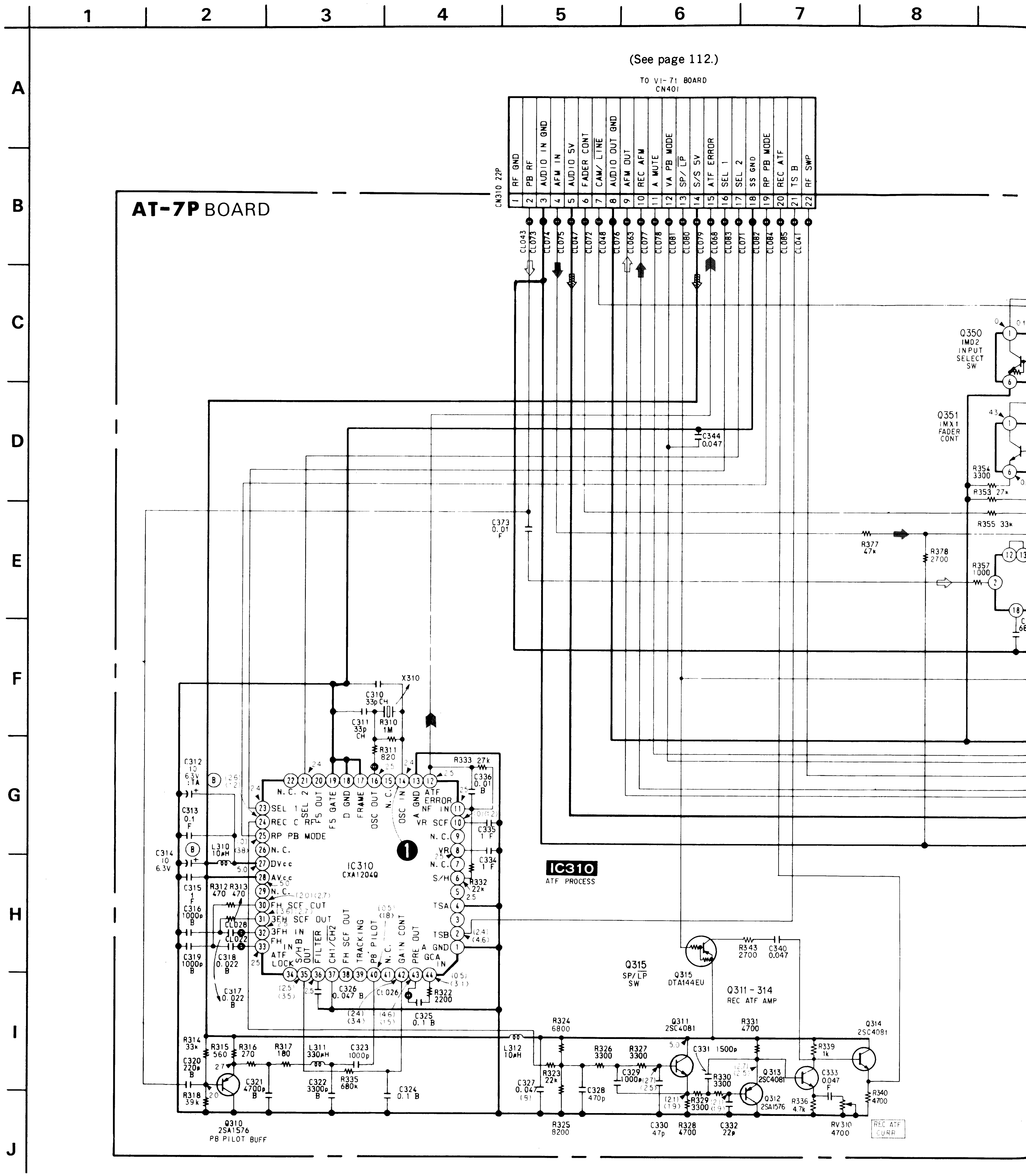
FK-15 BOARD

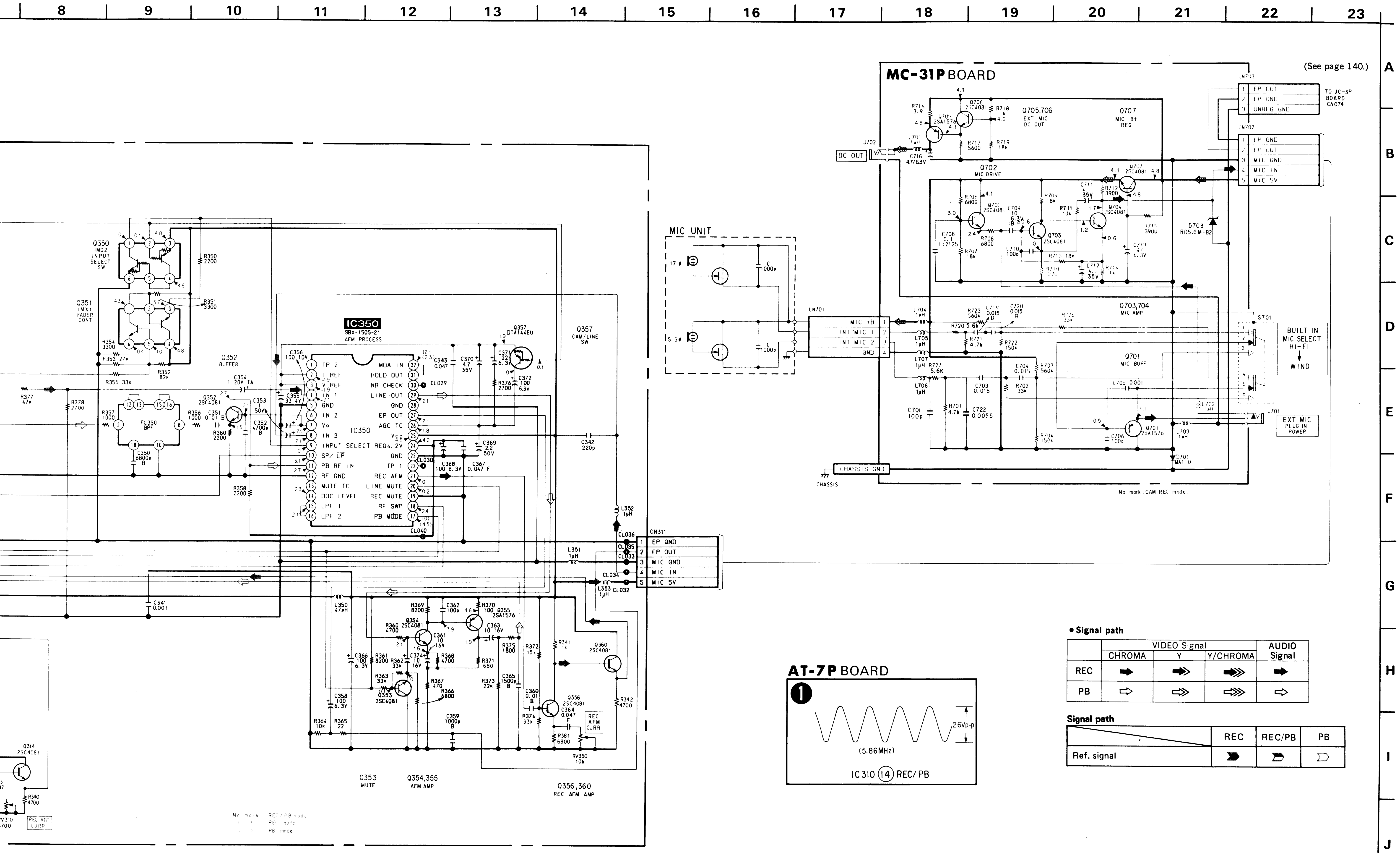

S093
REC
AUS,E MODEL
W80
9
1
PAUSE
S092
STOP
S091
FF
S090
PLAY
S089
REW
S088
S087
EJECT
D082
SLOW
S085
FRAME
S084
ERASE
S083
MARK
S082
INDEX
S081
DATA SCREEN
S080
ON ← OFF
S086
EDIT
1-631-898-
11


SBX-1505
IREF
VREF
IN1
GND
IN2
VG
IN3
INPUT SELECT
SP/LP
PD RF IN
RF GND
MUTE TC
DOC LEVEL
LPF1
LPF2
LINE
TU
CA
MOA IN
HOLD OUT
NR CHECK
LINE OUT
GND
EP OUT
AGC TC
Vcc
REG 4.2V
GND
TP1
REC AFM
LINE MUTE
REC MUTE
RF SWP
PB MODE
MOA
DET
VCA
AGC DET
42V REG
LIM
V/I
VCO
REC ON
COMP
HOLD 1
HOLD 2
LPF
PB AMP
DO DET
MUTE DET
PG DOUB
Q502 2SK209
Q503 DTC144EK

MC-31P (MIC AMP), AT-7P (ATF, AFM PROCESS) SCHEMATIC DIAGRAM

—Ref. No. MC-31P BOARD: 2000 series, AT-7P BOARD: 3000 series—


(See page 112.)
TO VI-71 BOARD CN401
CN310 22P
1 RF GND
2 PB RF
3 AUDIO IN GND
4 AFM IN
5 AUDIO SV
6 FADER CONT
7 CAM/LINE
8 AUDIO OUT GND
9 AFM OUT
10 REC AFM
11 A MUTE
12 VA PB MODE
13 SP/LP
14 S/S SV
15 ATF ERROR
16 SEL 1
17 SEL 2
18 SS GND
19 RP PB MODE
20 REC ATF
21 TS B
22 RF SWP
AT-7P BOARD
IC310 CXA1204Q
IC310 ATF PROCESS
X310
Q315 SP/LP SW
Q315 DTA144EU
Q311-314 REC ATF AMP
Q310 2SA1576 PB PILOT BUFF
Q311 2SC4081
Q312 2SA1576
Q313 2SC4081
Q314 2SC4081
Q350 IM02 INPUT SELECT SW
Q351 IMX1 FADER CONT
RV310 4700
REC ATF CURR


8
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16
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18
19
20
21
22
23
A
B
C
D
E
F
G
H
I
J
(See page 140.)
MC-31P BOARD
CN703
EP OUT
EP GND
UNREG GND
TO JC-3P BOARD CN074
CN702
EP GND
EP OUT
MIC GND
MIC IN
MIC 5V
Q705,706 EXT MIC DC OUT
Q707 MIC B+ REG
Q702 MIC DRIVE
Q703,704 MIC AMP
Q701 MIC BUFF
J702
DC OUT
D703 RD5.6M-B2
S701
BUILT IN MIC SELECT HI-FI ↓ WIND
J701
EXT MIC PLUG IN POWER
CN701
MIC +B
INT MIC 1
INT MIC 2
GND
MIC UNIT
CHASSIS GND
CHASSIS
D701 MA110
No mark: CAM REC mode.
Q350 IMD2 INPUT SELECT SW
Q351 IMX1 FADER CONT
Q352 BUFFER
FL350 BPF
IC350
SBX-1505-21
AFM PROCESS
TP 2
I REF
V REF
IN 1
GND
IN 2
Vo
IN 3
INPUT SELECT REG4.2V
SP/LP
PB RF IN
RF GND
MUTE TC
DOC LEVEL
LPF 1
LPF 2
MOA IN
HOLD OUT
NR CHECK
LINE OUT
GND
EP OUT
AGC TC
Vcc
GND
TP 1
REC AFM
LINE MUTE
REC MUTE
RF SWP
PB MODE
Q357 DTA144EU
Q357 CAM/LINE SW
CN311
EP GND
EP OUT
MIC GND
MIC IN
MIC 5V
Q353 MUTE
Q354,355 AFM AMP
Q356,360 REC AFM AMP
REC AFM CURR
RV350 10k
Q314 2SC4081
REC ATF CURR
No mark: REC/PB mode
( ): REC mode
〈 〉: PB mode
AT-7P BOARD
❶
2.6Vp-p
(5.86MHz)
IC310 ⑭ REC/PB

- **Signal path**

	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	➡
PB	⇨	⇨⇨	⇨⇨⇨	⇨

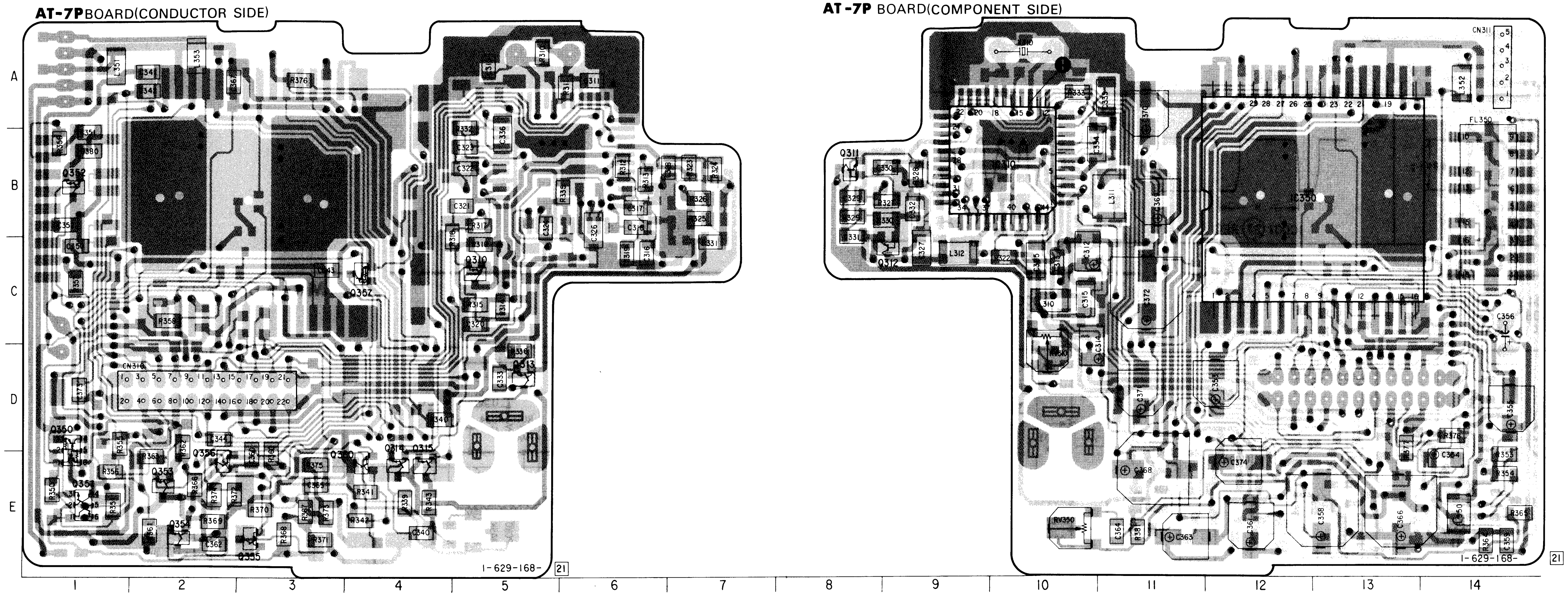
Signal path

	REC	REC/PB	PB
Ref. signal	➤	➢	▷

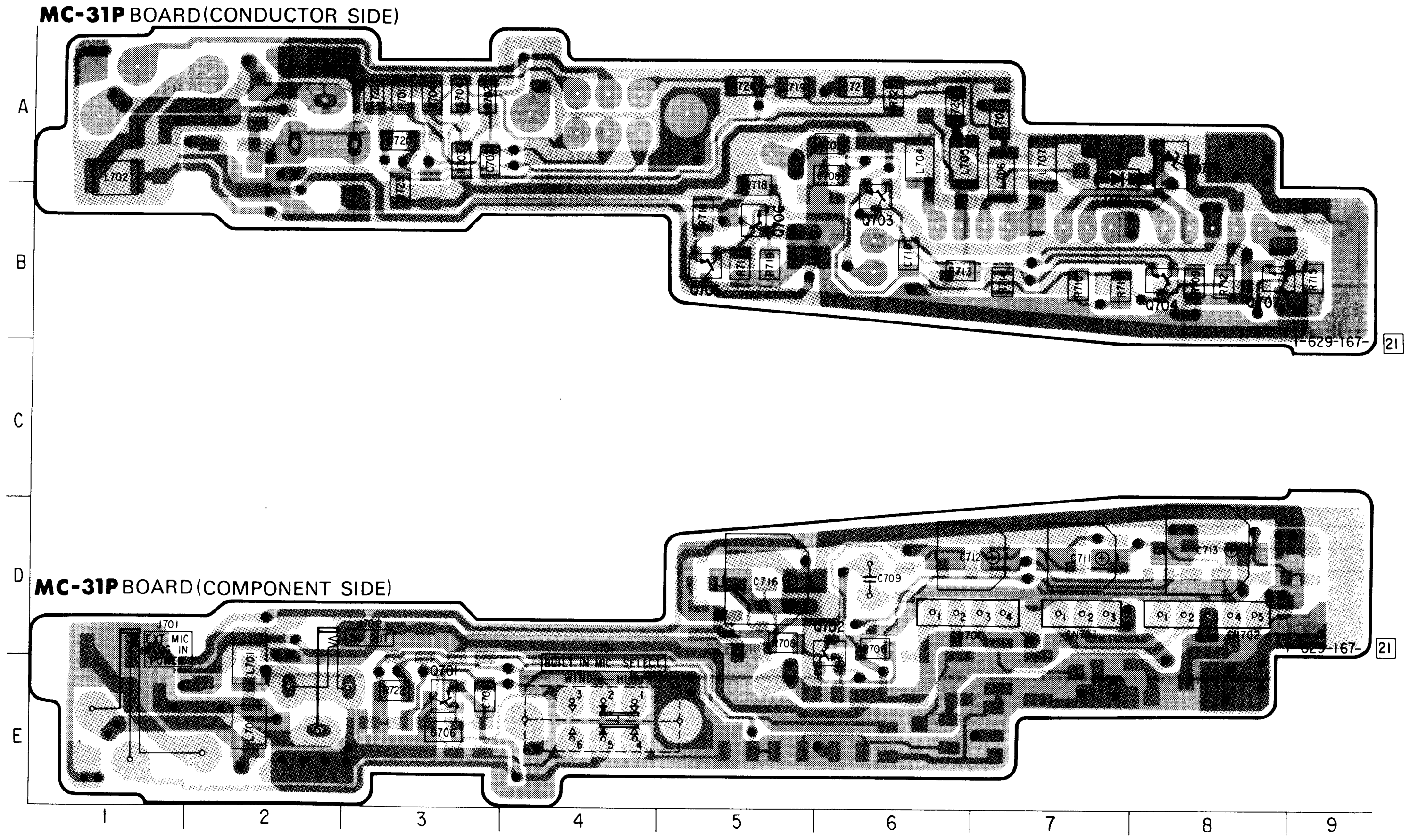
AUDIO AUDIO

MC-31P (MIC AMP), AT-7P (ATF, AFM PROCESS) PRINTED WIRING BOARDS

—Ref. No. MC-31P BOARD : 2000 series, AT-7P BOARD : 3000 series—


AT-7P BOARD(CONDUCTOR SIDE)
AT-7P BOARD(COMPONENT SIDE)
A
B
C
D
E
1
2
3
4
5
6
7
8
9
10
11
12
13
14
CN310
CN311
IC310
IC350
FL350
RV350
1-629-168-
21

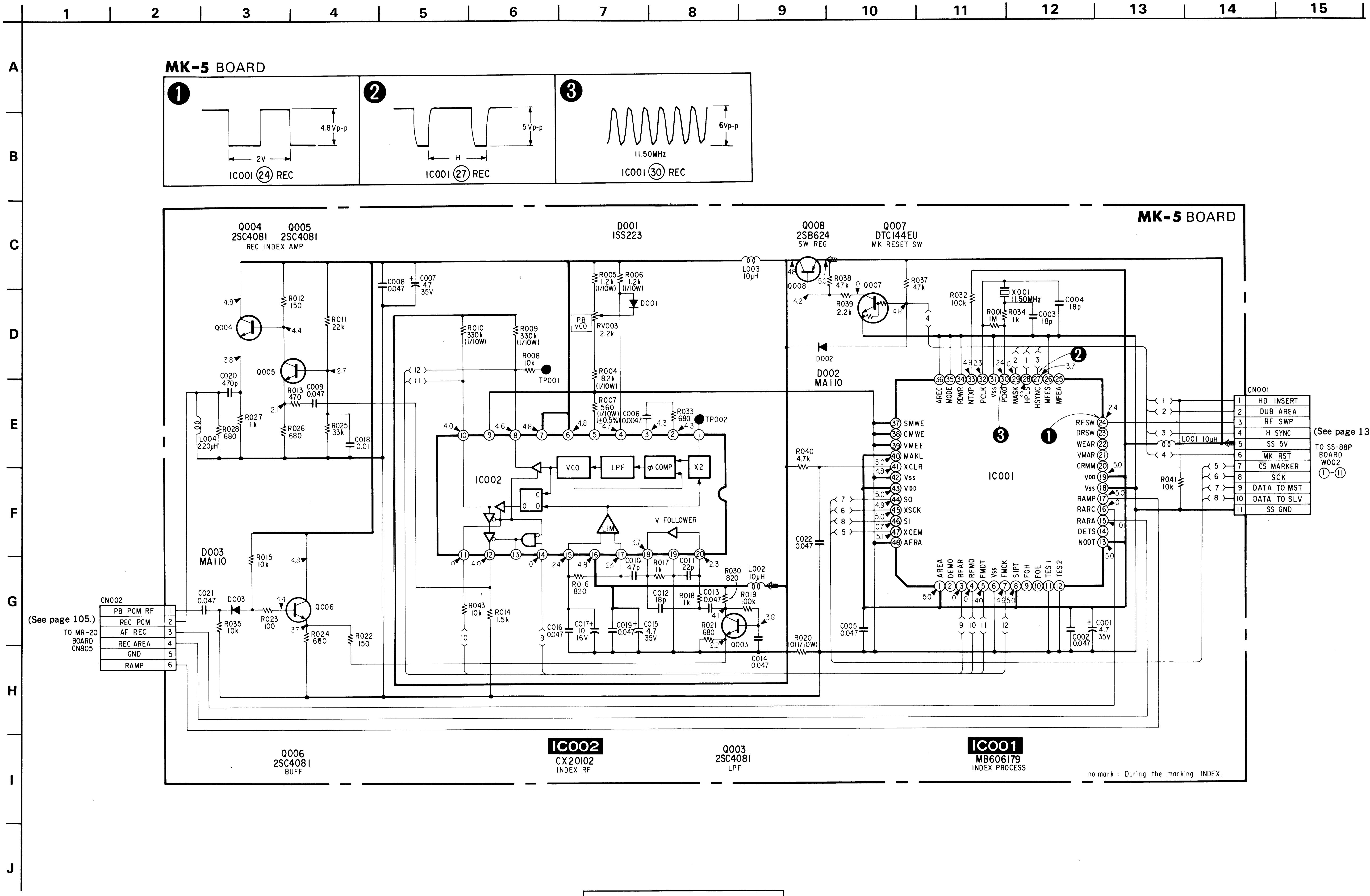
IC310	B-10
IC350	B-12
Q310	C-5
Q311	B-8
Q312	C-9
Q313	D-5
Q314	E-4
Q350	D-1
Q351	E-1
Q352	B-1
Q353	E-2
Q354	E-2
Q355	E-3
Q356	E-2
Q357	C-4
Q358	C-3
Q359	B-3
Q360	E-4


MC-31P BOARD(CONDUCTOR SIDE)
MC-31P BOARD(COMPONENT SIDE)
A
B
C
D
E
1
2
3
4
5
6
7
8
9
EXT MIC IN
BUILT-IN MIC SELECT
CN701
CN702
CN703
1-629-167-
21

D701	A-8
Q701	E-3
Q702	D-6
Q703	B-6
Q704	B-8
Q705	B-5
Q706	B-5
Q707	B-8

MK-5 (INDEX) SCHEMATIC DIAGRAM

—Ref. No. MK-5 BOARD : 2000 series—

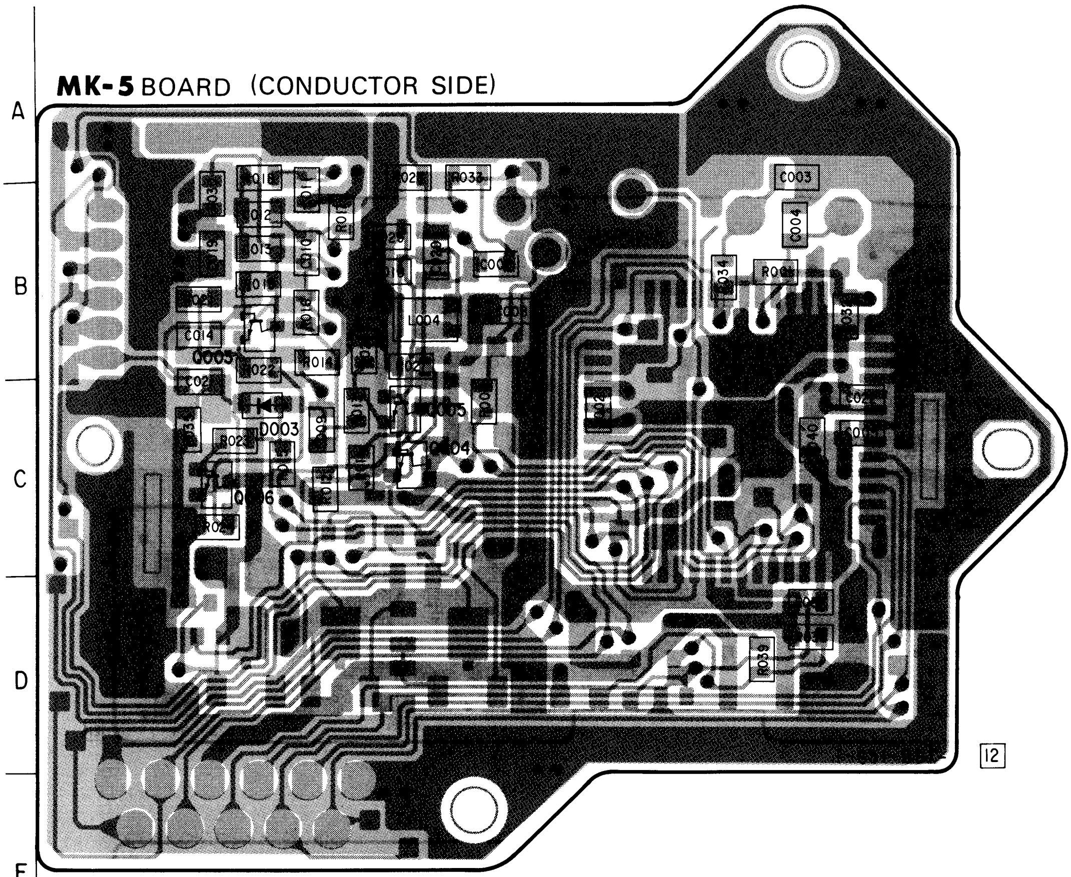


MK-5 BOARD
❶ 4.8Vp-p 2V IC001 (24) REC
❷ 5Vp-p H IC001 (27) REC
❸ 6Vp-p 11.50MHz IC001 (30) REC
MK-5 BOARD
Q004 2SC4081 Q005 2SC4081 REC INDEX AMP
D001 1SS223
Q008 2SB624 SW REG
Q007 DTC144EU MK RESET SW
IC002 VCO LPF φ COMP X2 LIM V FOLLOWER
IC001
TP001
TP002
PB VCO RV003 2.2k
D002 MA110
D003 MA110
X001 11.50MHz
L001 10μH
L002 10μH
L003 10μH
L004 220μH
CN001
1 HD INSERT
2 DUB AREA
3 RF SWP
4 H SYNC
5 SS 5V
6 MK RST
7 CS MARKER
8 SCK
9 DATA TO MST
10 DATA TO SLV
11 SS GND
(See page 132.)
TO SS-88P BOARD W002 ①-⑪
CN002
1 PB PCM RF
2 REC PCM
3 AF REC
4 REC AREA
5 GND
6 RAMP
(See page 105.)
TO MR-20 BOARD CN805
SMWE CMWE VMEE MAKL XCLR Vss VDD SO XSCK SI XCEM AFRA
AREC MODE RDWR NTXP PCLK Vss PCKO MASK HPLS HSYNC MFES MFEA
RFSW DRSW WEAR VMAR CRMM VDD Vss RAMP RARC RARA DETS NODT
AREA DEMO RFAR RFMD FMDT Vss FMCK SIPT FOH FOL TES1 TES2
Q006 2SC4081 BUFF
IC002 CX20102 INDEX RF
Q003 2SC4081 LPF
IC001 MB606179 INDEX PROCESS
no mark : During the marking INDEX.

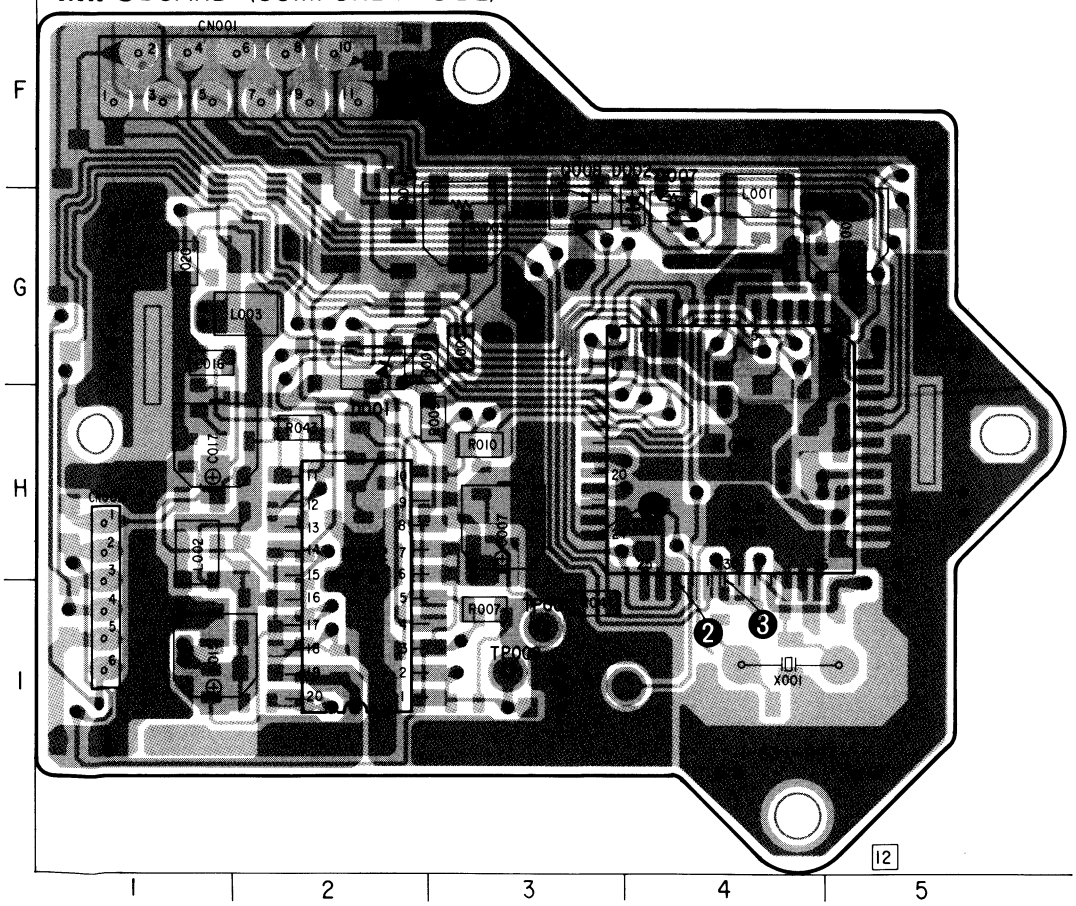
MK-5 (INDEX) PRINTED WIRING BOARD

—Ref. No. MK-5 BOARD: 2000 series—

MK-5 BOARD (CONDUCTOR SIDE)


A
B
C
D
E
C003
C004
R001
R034
R033
C005
L004
Q003
D003
Q005
Q004
Q006
C014
R022
R023
R039
12

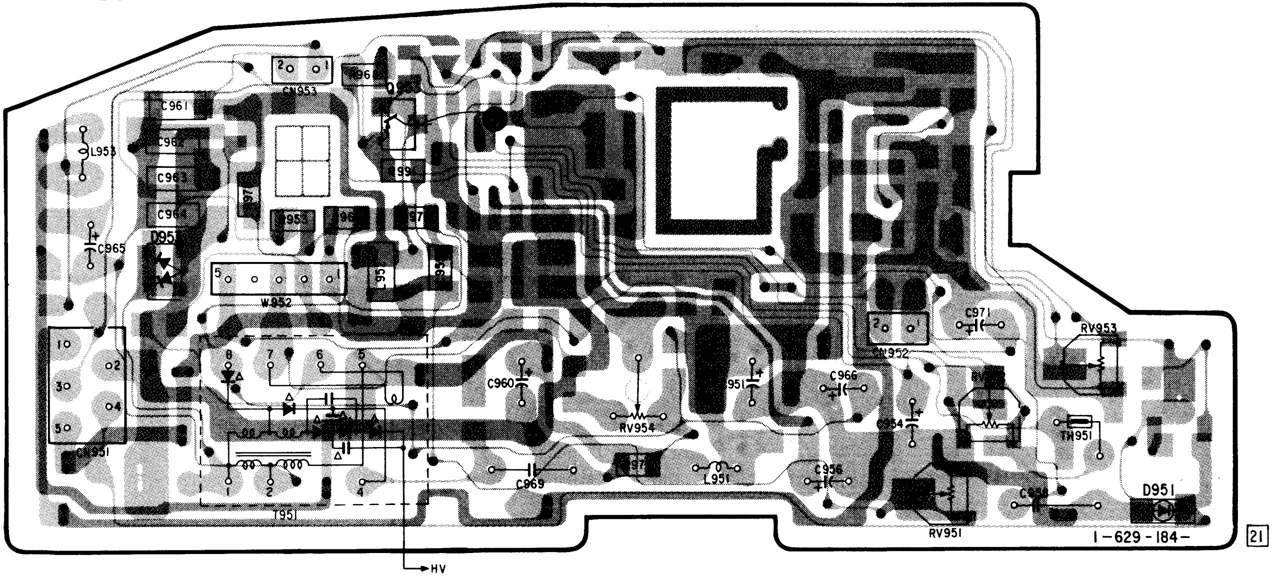
MK-5 BOARD (COMPONENT SIDE)


F
G
H
I
1
2
3
4
5
CN001
Q008
D002
Q007
L001
L003
L002
D001
R010
R042
R016
R007
C017
C007
TP001
TP002
X001
❷
❸
12

D001	H-2
D002	F-4
D003	C-2
IC001	H-4
IC002	H-2
Q003	B-1
Q004	C-3
Q005	C-3
Q006	C-2
Q007	F-4
Q008	F-3

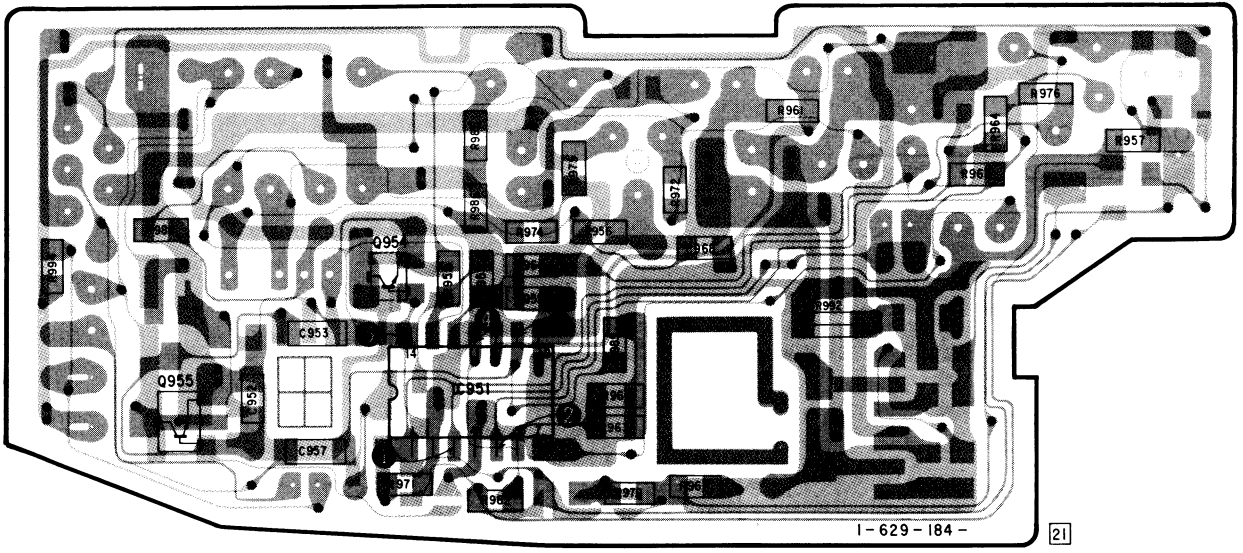
VF-16P (VIEWFINDER) PRINTED WIRING BOARD
—Ref. No. VF-16P BOARD : 3000 series—

VF-16P BOARD (COMPONENT SIDE)



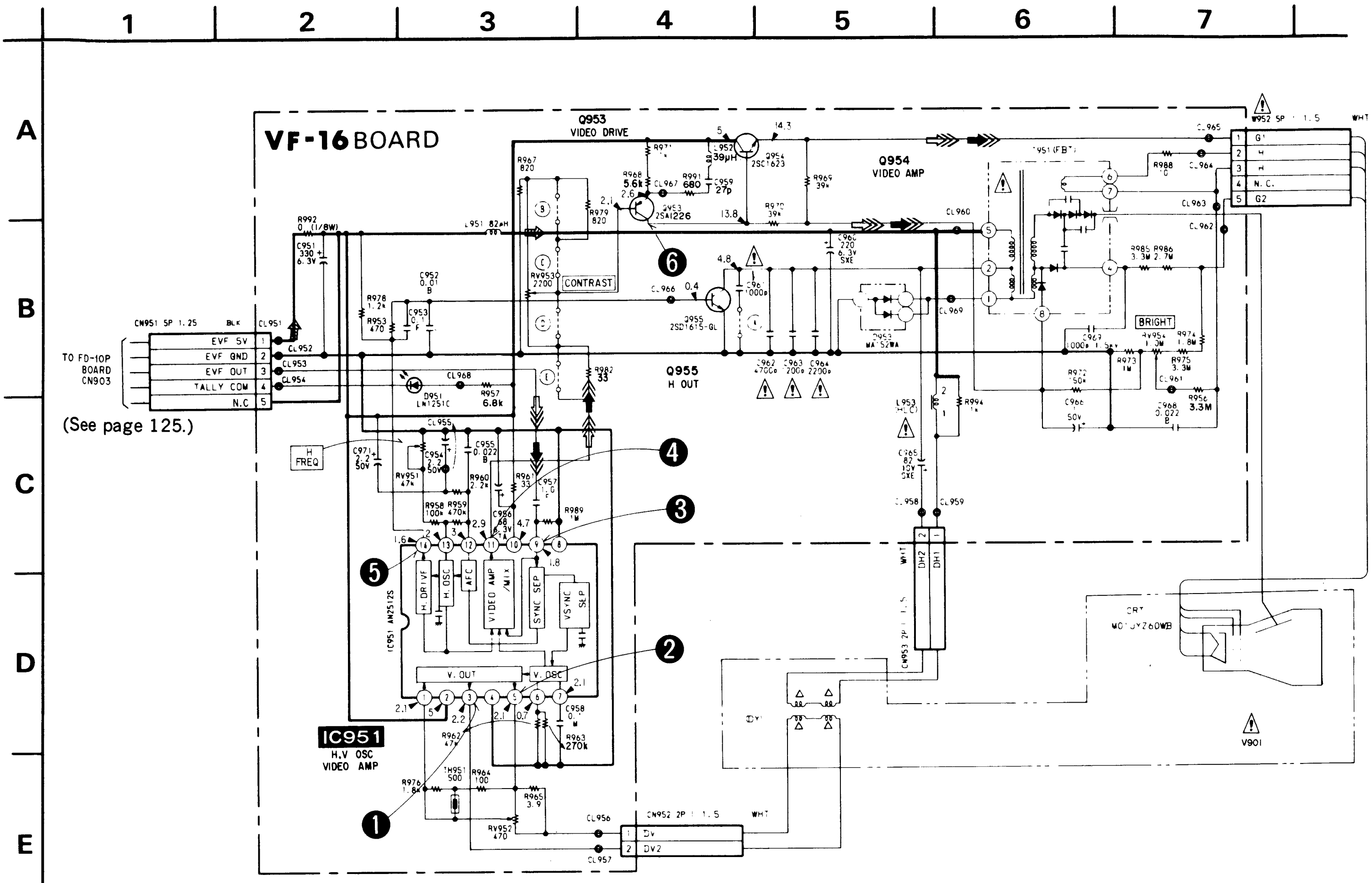
CN953
Q953
C961
L953
C963
C964
C965
W952
CN951
T951
C960
RV954
C969
L951
C971
RV953
CN952
C966
C954
TH951
C956
C958
D951
RV951
HV
1-629-184-
21

VF-16P BOARD (CONDUCTOR SIDE)

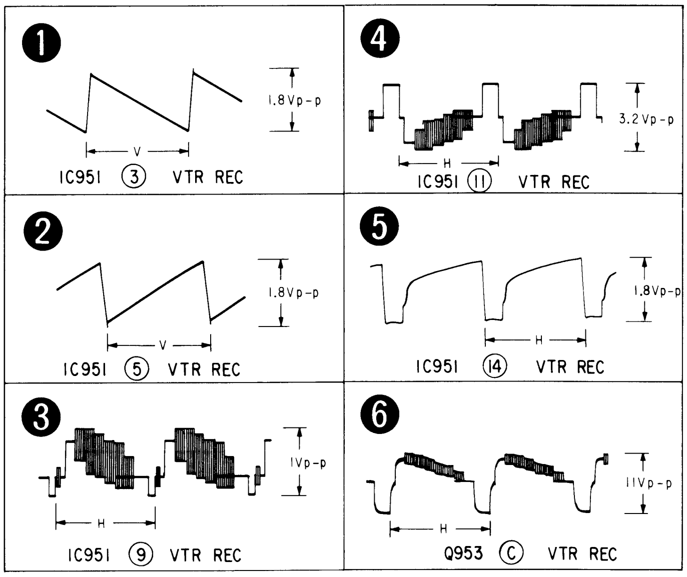


R961
R976
R957
R974
Q954
C953
Q955
IC951
C957
R992
1-629-184-
21

VF-16P (VIEWFINDER) SCHEMATIC DIAGRAM
—Ref. No. VF-16P BOARD: 3000 series—


1
2
3
4
5
6
7
A
B
C
D
E
VF-16 BOARD
Q953 VIDEO DRIVE
Q954 VIDEO AMP
Q955 H OUT
IC951 H.V OSC VIDEO AMP
IC951 AN2512S
H DRIVE
H. OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V. OUT
V. OSC
CONTRAST
BRIGHT
H FREQ
CN951 5P 1.25
EVF 5V
EVF GND
EVF OUT
TALLY COM
N.C
TO FD-10P BOARD CN903
(See page 125.)
CN952 2P 1.5
DV
DV2
CN953 2P 1.5
DH1
DH2
CN952 5P 1.5
G1
H
H
N. C.
G2
T951 (FBT)
CRT MO1JYZ60WB
V901
DY
D951 LN1251C
D953 MA152WA
2SC1623
2SA1226
2SD1615-GL
R957 6.8k
R963 270k
R968 5.6k
R991 680
C959 27p
L952 39μH
R956 3.3M
R992 0 (1/8W)
C951 330 6.3V
R982 33
14.3
13.8
4.8
0.4
2.1
2.6
2.9
3
4.7
1.8
1.6
2.2
0.7

VF-16P BOARD



• Signal path

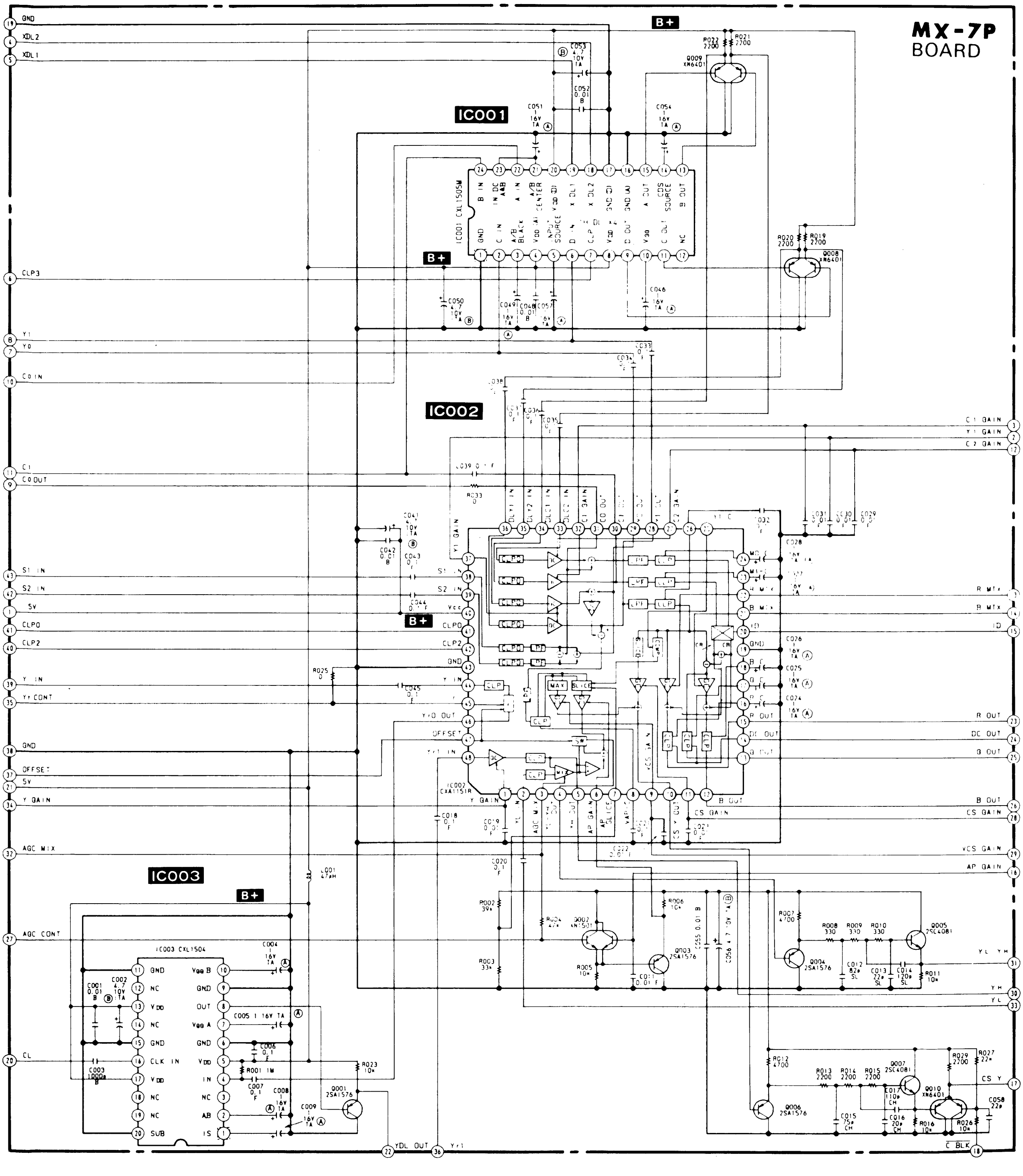
	VIDEO Signal		
	CHROMA	Y	Y/CHROMA
REC	➡	➡»	➡⋙
PB	⇨	⇨»	⇨⋙

MX-7P (CAMERA MATRIX) SCHEMATIC DIAGRAM

1 2 3 4 5 6 7

A B C D E F G H I J

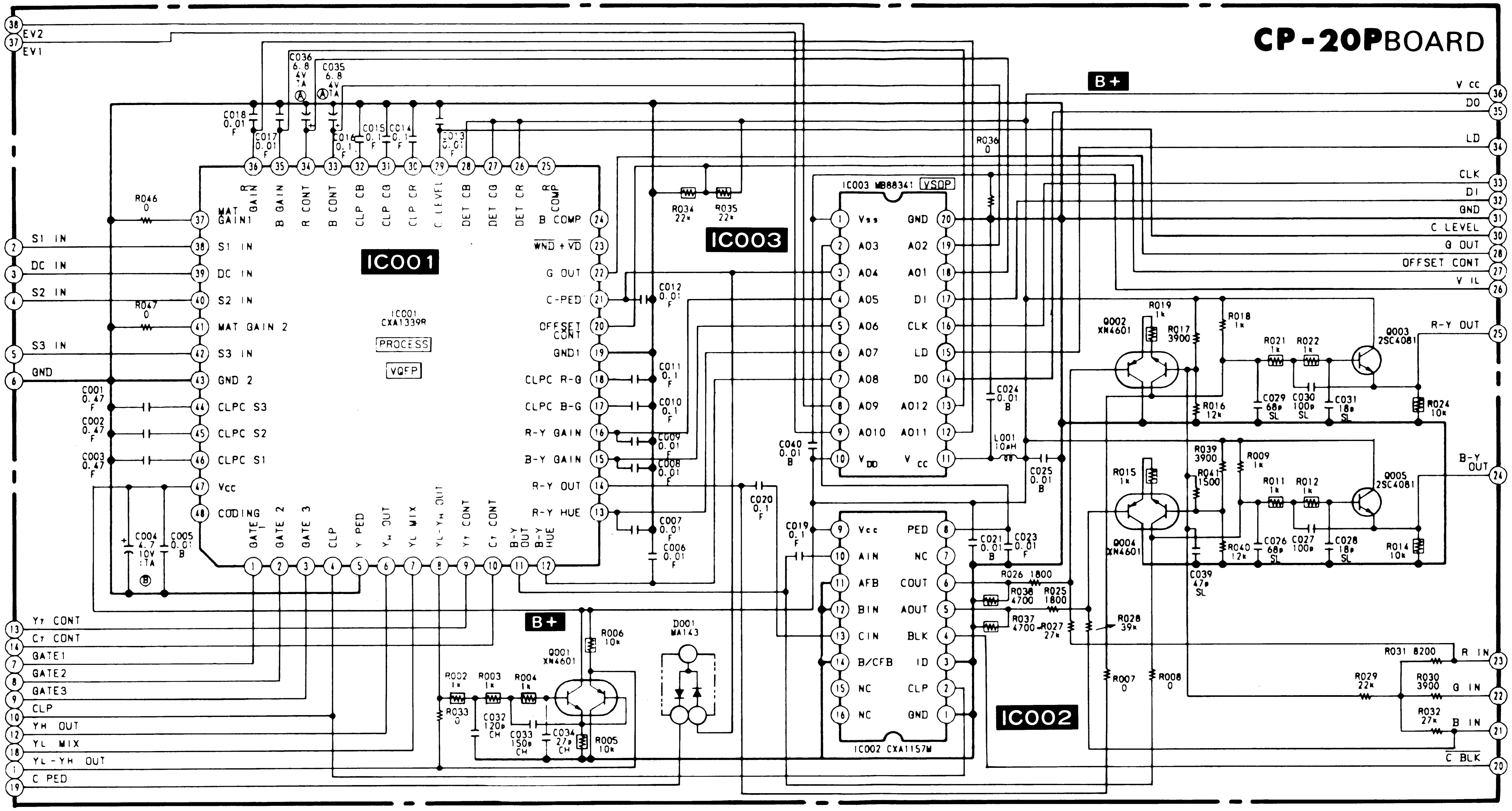
MX-7P BOARD is replaced as a block, so the PRINTED WIRING BOARD of it is omitted.



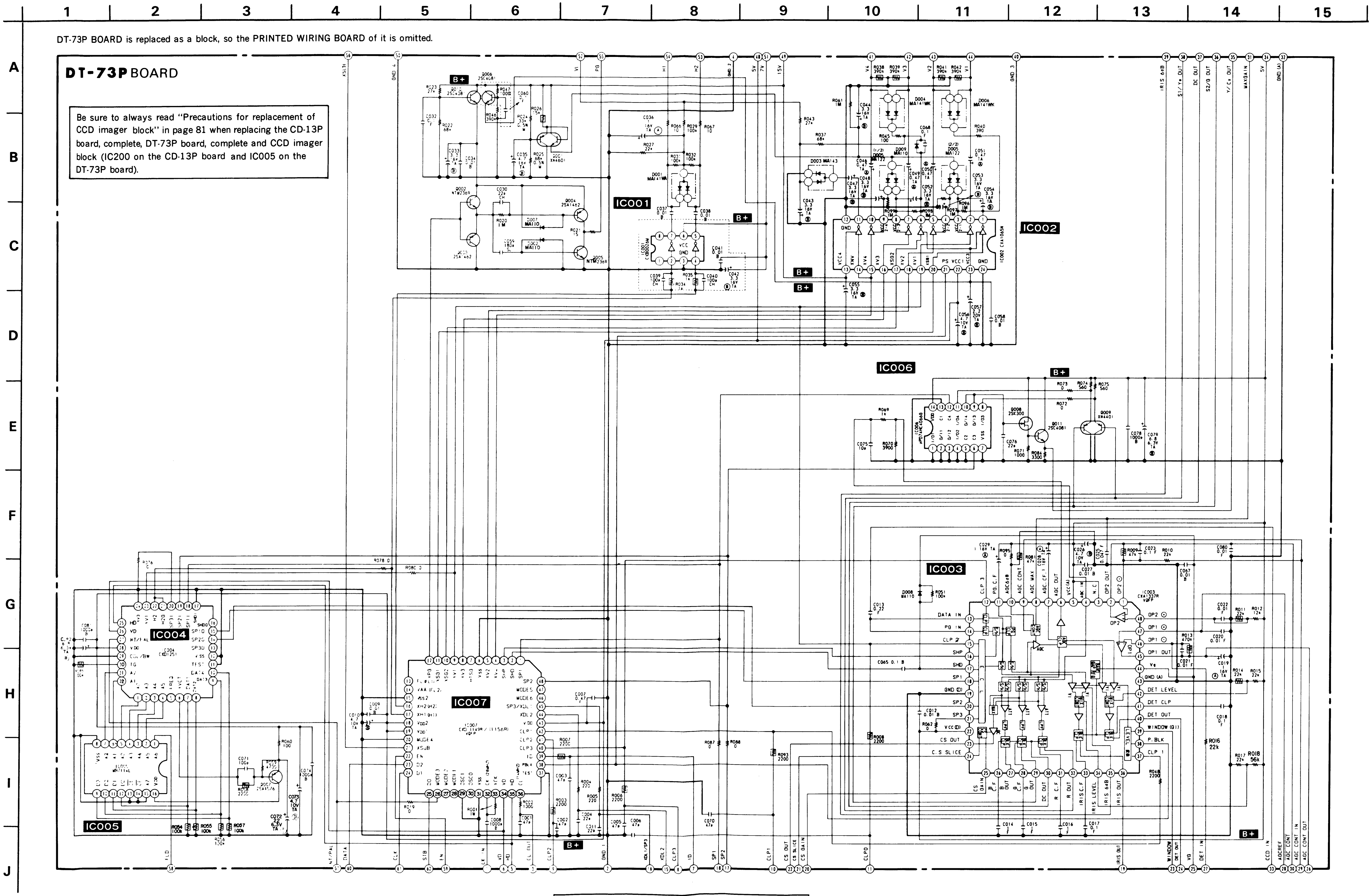
MX-7P
BOARD
IC001
IC002
IC003
B+
IC001 CXL1505M
IC002 CXA1151R
IC003 CXL1504
GND
XDL2
XDL1
CLP3
Y1
Y0
C0 IN
C1
C0 OUT
S1 IN
S2 IN
5V
CLP0
CLP2
Y IN
Y1 CONT
GND
OFFSET
5V
Y GAIN
AGC MIX
AGC CONT
CL
YDL OUT
Y1
C1 GAIN
Y1 GAIN
C2 GAIN
R MTX
B MTX
ID
R OUT
DC OUT
G OUT
B OUT
CS GAIN
VCS GAIN
AP GAIN
YL YH
YH
YL
CS Y
C BLK
Q001 2SA1576
Q002 XN1501
Q003 2SA1576
Q004 2SA1576
Q005 2SC4081
Q006 2SA1576
Q007 2SC4081
Q008 XN6401
Q009 XN6401
Q010 XN6401
R022 2200
R021 2200
R020 2200
R019 2200
R025 0
R033 0
L001 47μH
R002 39k
R003 33k
R004 47k
R005 10k
R006 10k
R007 4700
R008 330
R009 330
R010 330
R011 10k
R012 4700
R013 2200
R014 2200
R015 2200
R016 10k
R026 10k
R027 22k
R029 2200
R023 10k
R001 1M
C001 0.01 B
C002 4.7 10V TA
C003 1000p B
C004 1 16V TA
C005 1 16V TA
C006 0.1
C007 0.1 F
C008 1 16V TA
C009 1 16V TA
C012 82p SL
C013 22p SL
C014 120p SL
C015 75p CH
C016 20p CH
C017 110p CH
C058 22p
C055 0.01 B
C056 4.7 10V TA
VDD B
GND
OUT
VDD A
VDD
IN
NC
AB
IS
CLK IN
SUB

CP-20P (CAMERA PROCESS) SCHEMATIC DIAGRAM

CP-20P BOARD is replaced as a block, so the PRINTED WIRING BOARD of it is omitted.


CP-20PBOARD
IC001
CXA1339R
PROCESS
VQFP
IC002
IC002 CXA1157M
IC003
IC003 MB88341 VSOP
B+
Q001 XN4601
Q002 XN4601
Q003 2SC4081
Q004 XN4601
Q005 2SC4081
D001 MA143
EV2
EV1
S1 IN
DC IN
S2 IN
S3 IN
GND
YT CONT
CT CONT
GATE1
GATE2
GATE3
CLP
YH OUT
YL MIX
YL-YH OUT
C PED
V CC
DO
LD
CLK
DI
GND
C LEVEL
G OUT
OFFSET CONT
V IL
R-Y OUT
B-Y OUT
R IN
G IN
B IN
C BLK
MAT GAIN1
MAT GAIN 2
GND 2
CLPC S3
CLPC S2
CLPC S1
Vcc
CODING
B COMP
WND + VD
G OUT
C-PED
OFFSET CONT
GND1
CLPC R-G
CLPC B-G
R-Y GAIN
B-Y GAIN
R-Y OUT
R-Y HUE
Vss
A03
A04
A05
A06
A07
A08
A09
A010
VDD
A02
A01
DI
CLK
LD
DO
A012
A011
VCC
PED
NC
COUT
AOUT
BLK
ID
CLP
GND
AIN
AFB
BIN
CIN
B/CFB
R046 0
R047 0
R034 22k
R035 22k
R036 0
R019 1k
R017 3900
R018 1k
R021 1k
R022 1k
R016 12k
R024 10k
R039 3900
R041 1500
R009 1k
R011 1k
R012 1k
R015 1k
R040 12k
R014 10k
R026 1800
R038 4700
R025 1800
R037 4700
R027 27k
R028 39k
R007 0
R008 0
R031 8200
R029 22k
R030 3900
R032 27k
R002 1k
R003 1k
R004 1k
R033 0
R005 10k
R006 10k
C001 0.47 F
C002 0.47 F
C003 0.47 F
C004 4.7 10V TA
C005 0.01 B
C006 0.01 F
C007 0.01 F
C008 0.01 F
C009 0.01 F
C010 0.1 F
C011 0.1 F
C012 0.01 F
C013 0.01 F
C014 0.1 F
C015 0.1 F
C016
C017 0.01 F
C018 0.01 F
C019 0.1 F
C020 0.1 F
C021 0.01 B
C023 0.01 F
C024 0.01 B
C025 0.01 B
C026 68p SL
C027 100p
C028 18p SL
C029 68p SL
C030 100p SL
C031 18p SL
C032 120p CH
C033 150p CH
C034 27p CH
C035 6.8 4V TA
C036 6.8 4V TA
C039 47p SL
C040 0.01 B
L001 10μH

DT-73P (TIMING GENERATOR, CCD DRIVE) SCHEMATIC DIAGRAM


1
2
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4
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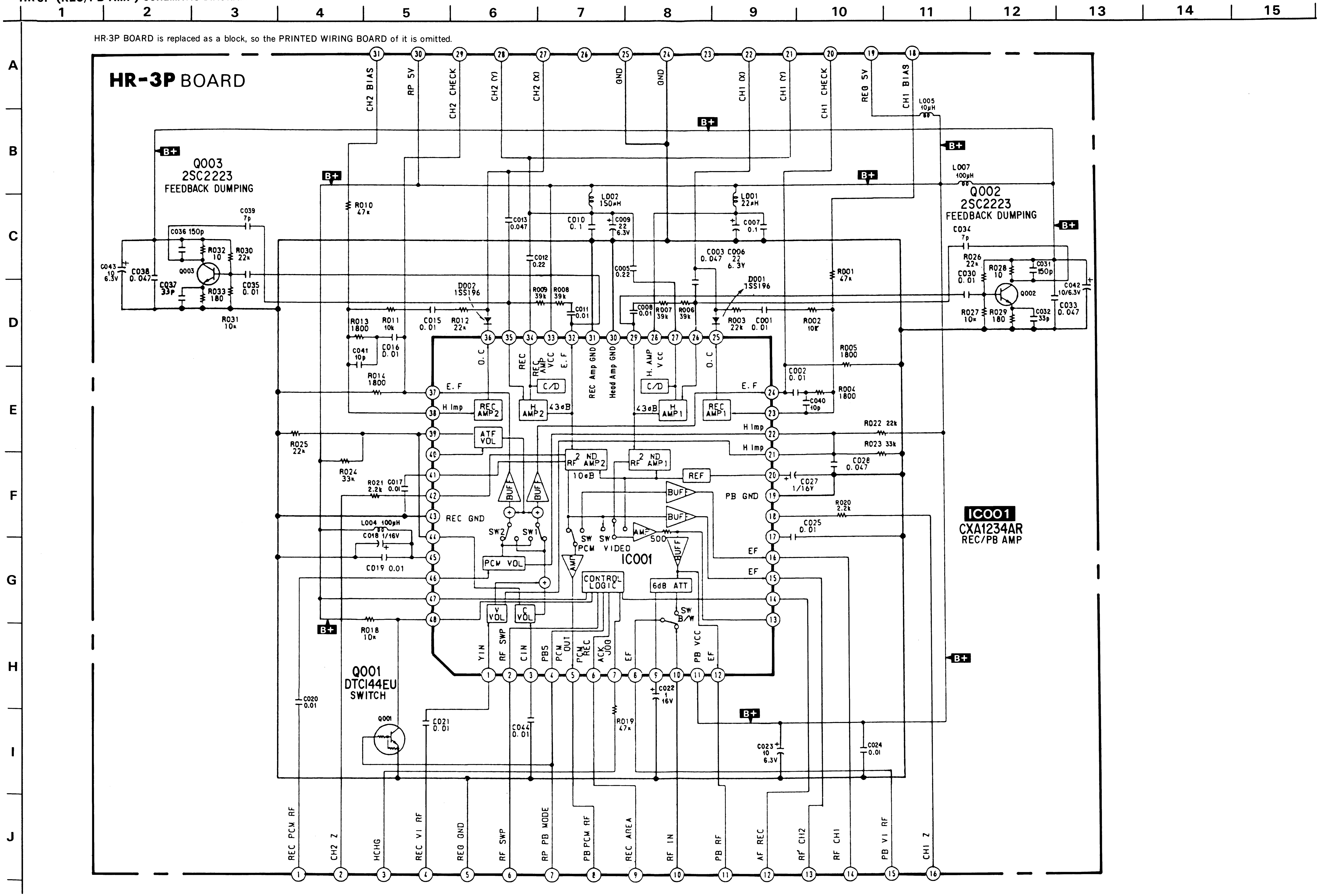
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
DT-73P BOARD
IC001
IC002
IC003
IC004
IC005
IC006
IC007
B+
DATA IN
PG IN
CLP 2
SHP
SHD
SP1
GND (D)
SP2
SP3
VCC (D)
CS OUT
C.S SLICE
OP2 ⊕
OP1 ⊕
OP1 ⊖
OP1 OUT
Vg
GND (A)
DET LEVEL
DET CLP
DET OUT
WINDOW (G1)
P. BLK
CLP 1
CLP 3
PG C.F
AGC 6dB
AGC CONT
AGC MAX
AGC C.F.
AGC OUT
VCC (A)
AGC IN
N.C
OP2 OUT
OP2 ⊖
CS GAIN
B C.F
B OUT
R C.F
DC OUT
R OUT
IRIS C.F
IRIS LEVEL
IRIS 6dB
IRIS 6dB
S1/Y+ OUT
DC OUT
S2/G OUT
Y/C+ OUT
MAXGAIN
5V
GND (A)
GND 4
V1
PG
H1
H2
GND 2
5V
7V
15V
V4
V3
V2
V1
GND 3
XSUB
FLD
NT/PAL
DATA
CLK
STB
EN
LK IN
VD
HD
CL OUT
CLP2
GND 1
XDL1/SP3
XDL2
CLP3
ID
SP1
SP2
CLP1
CS OUT
CS SLICE
CS GAIN
CLPD
IRIS OUT
WINDOW
DET OUT
VG
DET IN
CCD IN
AGCREF
AGC CONT IN
AGC CONT OUT

DT-73P BOARD is replaced as a block, so the PRINTED WIRING BOARD of it is omitted.

Be sure to always read "Precautions for replacement of CCD imager block" in page 81 when replacing the CD-13P board, complete, DT-73P board, complete and CCD imager block (IC200 on the CD-13P board and IC005 on the DT-73P board).

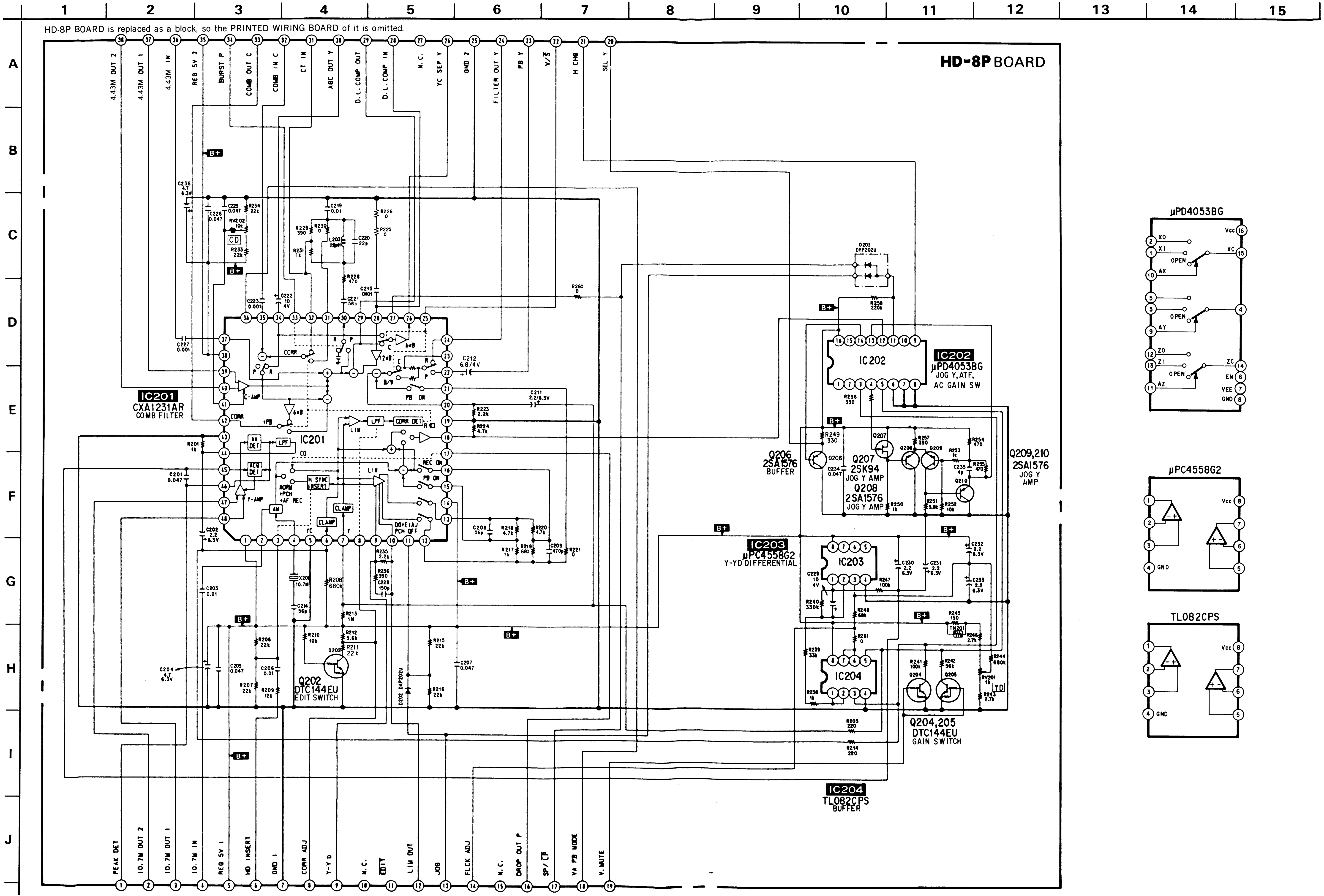
HR-3P (REC/PB AMP) SCHEMATIC DIAGRAM

HR-3P BOARD is replaced as a block, so the PRINTED WIRING BOARD of it is omitted.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
HR-3P BOARD
CH2 BIAS
RP 5V
CH2 CHECK
CH2 (Y)
CH2 (X)
GND
GND
CH1 (X)
CH1 (Y)
CH1 CHECK
REG 5V
CH1 BIAS
B+
Q003
2SC2223
FEEDBACK DUMPING
Q002
2SC2223
FEEDBACK DUMPING
L005 10μH
L007 100μH
L002 150μH
L001 22μH
R010 47k
C013 0.047
C010 0.1
C009 22 6.3V
C007 0.1
C003 0.047
C006 22 6.3V
C039 7p
C036 150p
R032 10
R030 22k
C043 10 6.3V
C038 0.047
C037 33p
R033 180
C035 0.01
R031 10k
C012 0.22
C005 0.22
D002 1SS196
D001 1SS196
R009 39k
R008 39k
C011 0.01
C008 0.01
R007 39k
R006 39k
R001 47k
C034 7p
R026 22k
C030 0.01
R028 10
C031 150p
C042 10/6.3V
R027 10k
R029 180
C032 33p
C033 0.047
R013 1800
R011 10k
C015 0.01
R012 22k
R003 22k
C001 0.01
R002 10k
C041 10p
C016 0.01
R014 1800
R005 1800
C002 0.01
R004 1800
C040 10p
O.C
REC
REC AMP VCC
E.F
REC Amp GND
Head Amp GND
H. AMP VCC
O.C
C/D
C/D
E.F
H Imp
REC AMP2
H AMP2
43dB
43dB
H AMP1
REC AMP1
E.F
H Imp
H Imp
R022 22k
R023 33k
R025 22k
ATF VOL
2ND RF AMP2
2ND RF AMP1
REF
C028 0.047
R024 33k
10dB
C027 1/16V
R021 2.2k
C017 0.01
BUF
BUF
BUF
BUF
PB GND
R020 2.2k
REC GND
SW2
SW1
AMP
SW PCM
SW VIDEO
500
C025 0.01
L004 100μH
C018 1/16V
PCM VOL
IC001
EF
C019 0.01
AMP
BUFF
EF
CONTROL LOGIC
6dB ATT
SW B/W
V VOL
C VOL
R018 10k
Q001
DTC144EU
SWITCH
Y IN
RF SWP
C IN
PBS
PCM OUT
PCM REC
ACK JOG
EF
PB VCC
EF
C022 1 16V
C020 0.01
C021 0.01
C044 0.01
R019 47k
C023 10 6.3V
C024 0.01
IC001
CXA1234AR
REC/PB AMP
REC PCM RF
CH2 Z
HCHG
REC V1 RF
REG GND
RF SWP
RP PB MODE
PB PCM RF
REC AREA
RF IN
PB RF
AF REC
RF CH2
RF CH1
PB V1 RF
CH1 Z

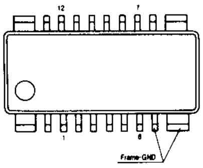
HD-8P (COMB FILTER) SCHEMATIC DIAGRAM

HD-8P BOARD is replaced as a block, so the PRINTED WIRING BOARD of it is omitted.

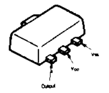

HD-8P BOARD
4.43M OUT 2
4.43M OUT 1
4.43M IN
REG 5V 2
BURST P
COMB OUT C
COMB IN C
CT IN
ABC OUT Y
D.L.COMP OUT
D.L.COMP IN
N.C.
YC SEP Y
GND 2
FILTER OUT Y
PB Y
V/S
H CHG
SEL Y
IC201
CXA1231AR
COMB FILTER
IC202
μPD4053BG
JOG Y, ATF, AC GAIN SW
IC203
μPC4558G2
Y-YD DIFFERENTIAL
IC204
TL082CPS
BUFFER
Q202
DTC144EU
EDIT SWITCH
Q206
2SA1576
BUFFER
Q207
2SK94
JOG Y AMP
Q208
2SA1576
JOG Y AMP
Q209,210
2SA1576
JOG Y AMP
Q204,205
DTC144EU
GAIN SWITCH
D203
DAP202U
D202 DAP202U
B+
PEAK DET
10.7M OUT 2
10.7M OUT 1
10.7M IN
REG 5V 1
HD INSERT
GND 1
CORR ADJ
Y-YD
N.C.
EDIT
LIM OUT
JOG
FLCK ADJ
N.C.
DROP OUT P
SP/LP
VA PB MODE
V.MUTE
μPD4053BG
μPC4558G2
TL082CPS

4-3. SEMICONDUCTORS

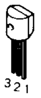
LB1631M


12
7
1
6
Frame-GND

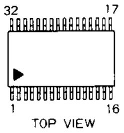
S8054ALB-LM-S
S8054ALR-S



S81250HG-RD-S



SBX1505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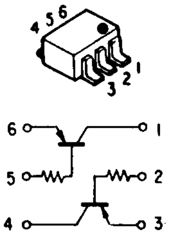
TOP VIEW

1MT1US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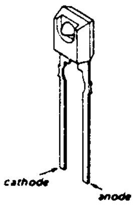
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anode

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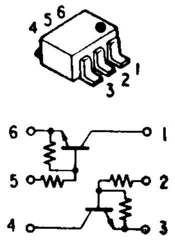
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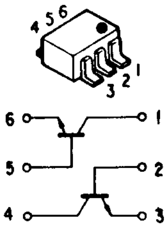
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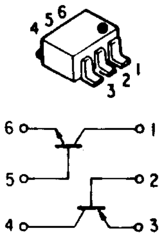
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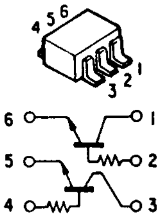
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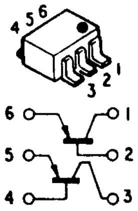
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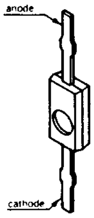
1T32-2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cathode

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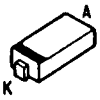

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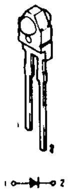

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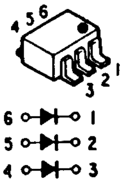
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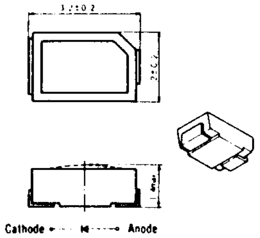
LN1251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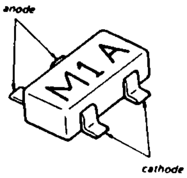
Anode

MA159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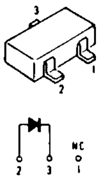
M1A
cathode

SB01-05CP



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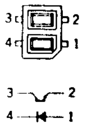

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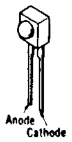

Anode
Cathode

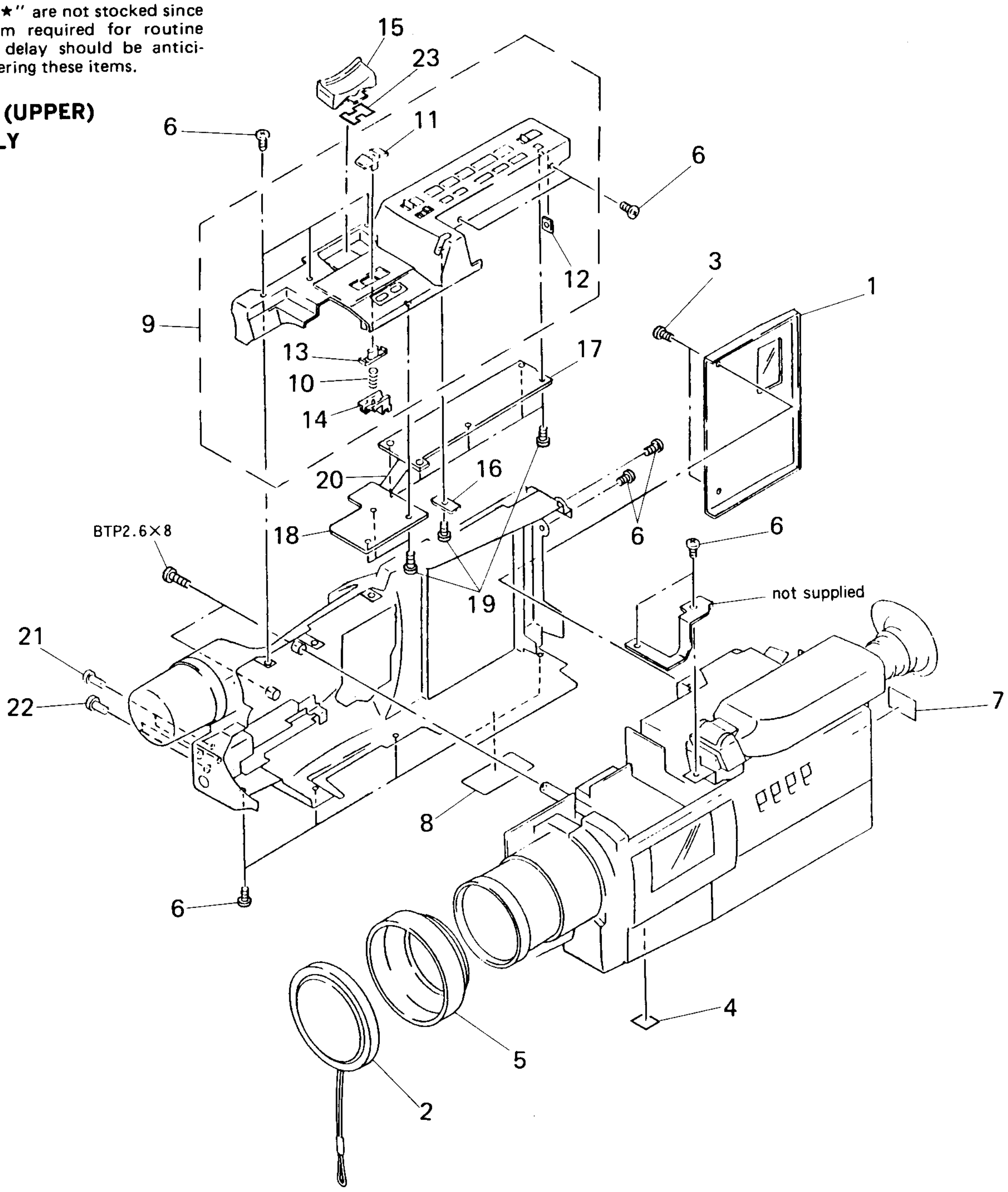
SECTION 5
EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.

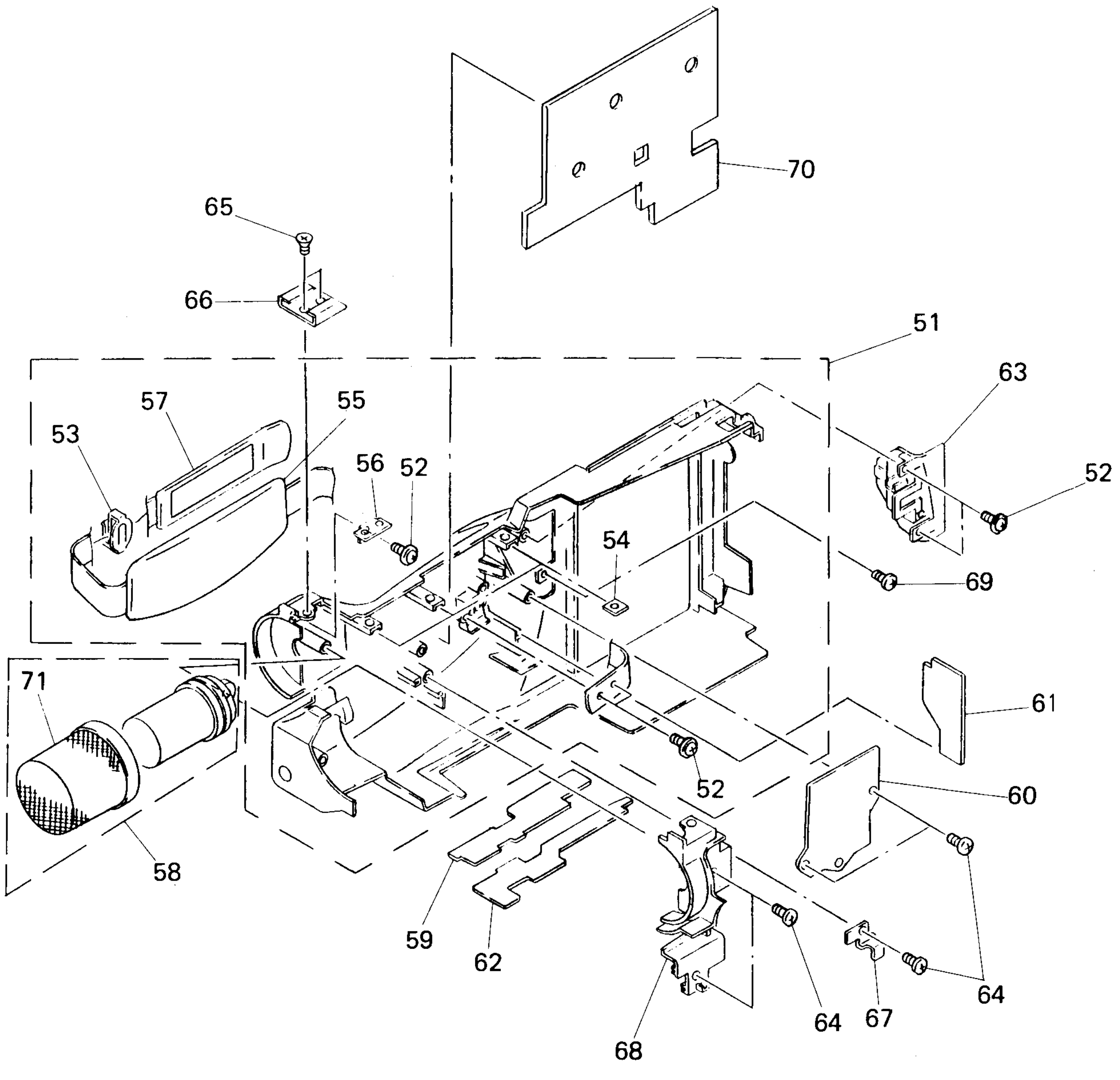
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1. CABINET (UPPER) ASSEMBLY



Ref.No	Part No.	Description	Remark
1	X-3732-745-1	LID ASSY, CASSETTE	
2	X-3732-710-1	CAP ASSY, HOOD	
3	3-733-912-01	SCREW (M2X2.5), SPECIAL HEAD	
4	★3-704-235-01	LABEL, CAUTION (UK MODEL)	
5	3-696-004-01	HOOD	
6	3-719-381-11	SCREW (M2X5)	
7	★3-719-683-01	LABEL, BATTERY FITTING	
8	★3-732-014-01	LABEL, MODEL NUMBER (AEP)	
	3-734-491-01	LABEL, MODEL NUMBER (UK/AUS/E MODEL)	
9	X-3732-703-1	CABINET (UPPER) SUB ASSY (AUS/E MODEL)	10-14
	X-3732-746-1	CABINET (UPPER) SUB ASSY (AEP/UK MODEL)	10-14
10	3-303-973-00	SPRING, COMPRESSION	
11	3-718-226-01	BUTTON, POWER	
12	3-718-233-01	NUT, PLATE	
13	★3-718-257-11	BUTTON, PUSH, POWER	
14	3-732-702-01	PLATE, REAR, P	
15	1-571-791-41	SWITCH, PUSH (T/W)	
16	★1-629-176-21	TR-31P BOARD	
17	★1-631-898-11	FK-15 BOARD	
18	★1-629-171-21	FC-20P BOARD	
19	3-713-790-01	SCREW (M2X5), TAPPING, P3	
20	1-574-481-11	CABLE, FLAT (1.0MM PITCH) 9P	
21	3-728-266-01	COVER, 2.5 JACK	
22	3-728-267-01	COVER, 3.5 JACK	
23	★3-734-427-01	PLATE, BLIND, Z	

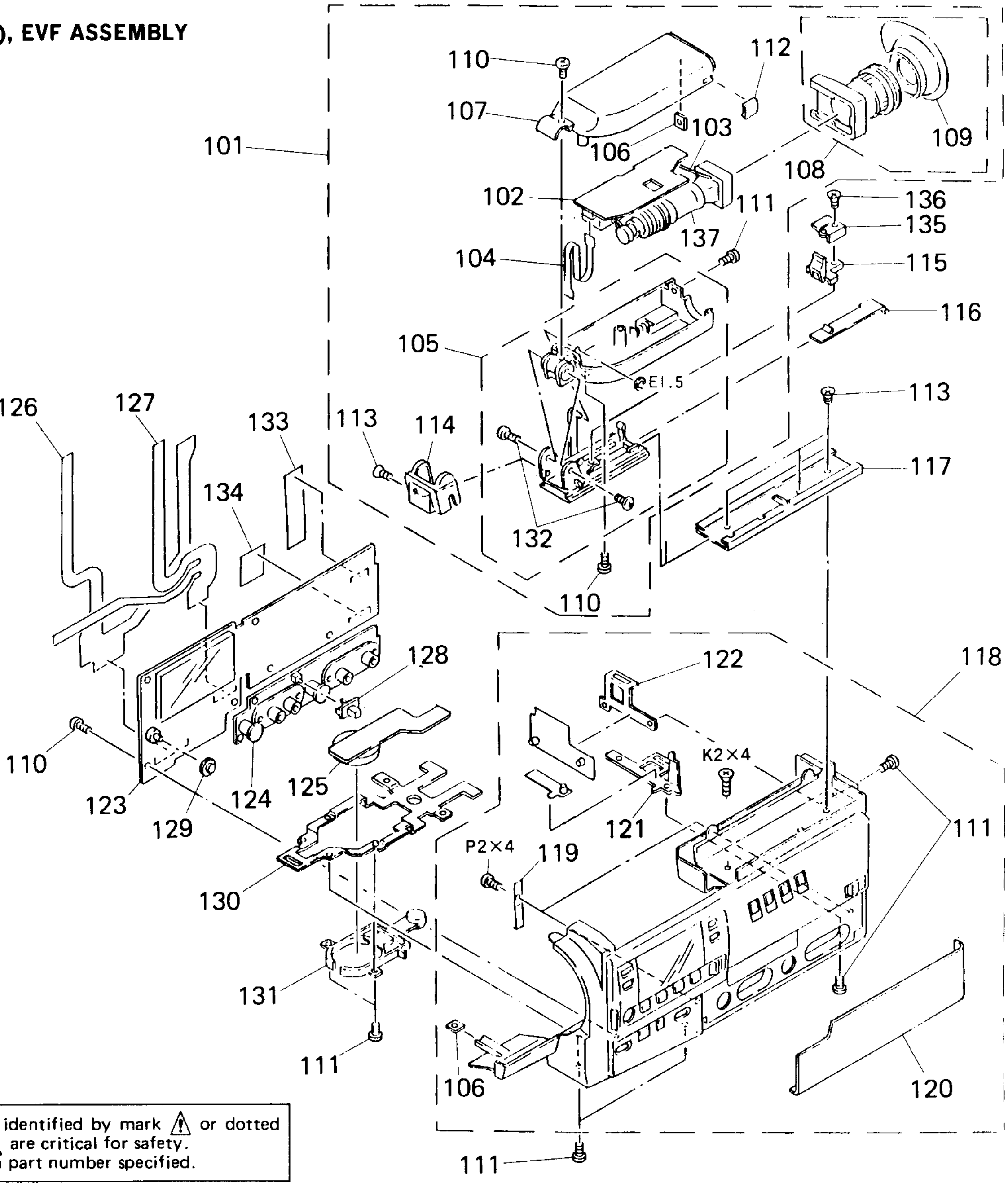
5-2. CABINET (G), GRIP ASSEMBLY



Ref.No	Part No.	Description	Remark
51	X-3732-712-1	CABINET (G) SUB ASSY	52-56
52	3-669-480-21	+ PTPWH 2	
53	3-714-007-01	CLAMP, HOOD	
54	3-718-233-01	NUT, PLATE	
55	3-724-591-01	PAD, GRIP	
56	3-732-710-01	NUT, PLATE, SHOE	
57	*3-724-582-01	BELT, GRIP	
58	1-542-121-11	MICROPHONE, ELECTRET CONDENSER	71
59	*A-7061-763-A	MC-31P BOARD, COMPLETE	
60	*A-7061-764-A	MK-5 BOARD, COMPLETE	
61	*1-629-172-21	SW-94P BOARD	

Ref.No	Part No.	Description	Remark
62	*1-629-174-21	JC-3P BOARD	
63	X-3732-702-1	BASE ASSY, SP	
64	3-713-790-01	SCREW (M2X6), TAPPING, P3	
65	3-719-831-21	SCREW (M2X4)	
66	3-724-511-01	SHOE, ACCESSORY	
67	*3-732-717-01	RETAINER, MJ	
68	3-732-750-01	CABINET, MICROPHONE	
69	3-719-381-11	SCREW (M2X5)	
70	3-734-426-01	SHEET, ACOUSTIC ABSORBENT	
71	X-2536-716-1	WIND SCREEN ASSY	

5-3. CABINET (R), EVF ASSEMBLY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E1.5
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122
118
K2×4
110
123
124
125
129
121
111
P2×4
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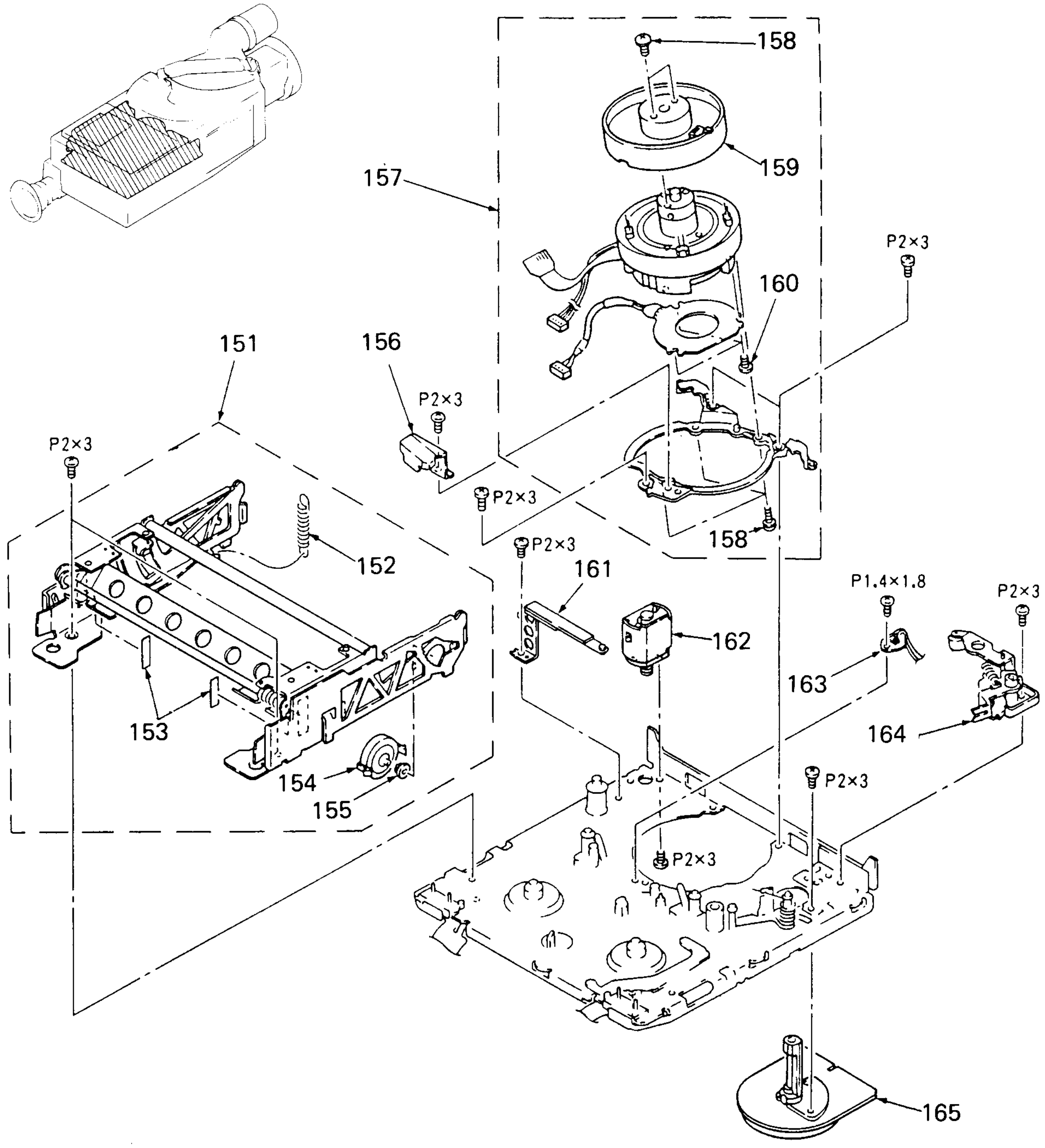
131
111
106
120
111

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No	Part No.	Description	Remark
101	A-7019-163-A	EVF ASSY	102-114, 132, 137
102	*A-7061-761-A	VF-16P BOARD, COMPLETE	
103	1-574-088-21	FIBER, OPTICAL	
104	1-629-191-11	FP-156 FLEXIBLE BOARD	
105	X-3732-716-1	CABINET (LOWER) ASSY, VF	132
106	3-718-233-01	NUT, PLATE	
107	3-732-751-01	CABINET (UPPER), VF	
108	X-3732-711-1	CONTACT LENS BLOCK ASSY	109
109	3-733-922-01	EYE CUP	
110	3-713-790-01	SCREW (M2X6), TAPPING, P3	
111	3-719-381-11	SCREW (M2X5)	
112	3-719-629-01	CLIP	
113	3-719-831-21	SCREW (M2X4)	
114	3-732-748-01	COVER, TS	
115	3-732-733-01	BLIND (B), FPC	
116	3-732-713-01	COVER, SF	
117	3-732-724-01	SHOE, VF	
118	X-3732-747-1	CABINET (R) SUB ASSY, (AEP/UK MODEL)	106, 111, 119-122
	X-3732-764-1	CABINET (R) SUB ASSY (AUS/E MODEL)	106, 111, 119-122
119	3-732-705-01	SPRING, LEAF	
120	3-732-745-01	LID, CONNECTOR (AUS/E MODEL)	
	3-732-745-51	LID, CONNECTOR (AEP/UK MODEL)	
121	3-732-757-01	SHEET METAL, STRAP	
122	3-732-784-01	SHEET METAL, CABINET (REAR)	
123	*A-7061-762-A	FD-10P BOARD, COMPLETE (AEP/UK MODEL)	
	*A-7061-944-A	FD-10P BOARD, COMPLETE (AUS/E MODEL)	
124	*1-629-170-21	PJ-21P BOARD	
125	*1-629-175-21	LI-8P BOARD	
126	1-629-192-11	FP-158 FLEXIBLE BOARD	
127	1-629-196-11	FP-164 FLEXIBLE BOARD	
128	3-713-538-01	KNOB, EDIT	
129	3-732-706-01	KNOB, IRIS	
130	X-3732-741-1	SHEET METAL ASSY, TRIPOD	
131	3-732-747-01	HOLDER, BATTERY	
132	3-713-790-31	SCREW (M2X8), TAPPING, P3	
133	1-574-810-11	CABLE FLAT (1.0MM PITCH) 20P	
134	1-629-776-11	FP-202 FLEXIBLE BOARD	
135	3-734-449-01	SUPPORT, VF	
136	3-734-451-01	SCREW (M2)	
137	⚠.1-452-482-11	CRT ASSY (M01JYZ60WB)	

5-4. MECHANICAL ASSEMBLY (1)



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P2×3
P2×3
P2×3
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P2×3
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P1.4×1.8
P2×3
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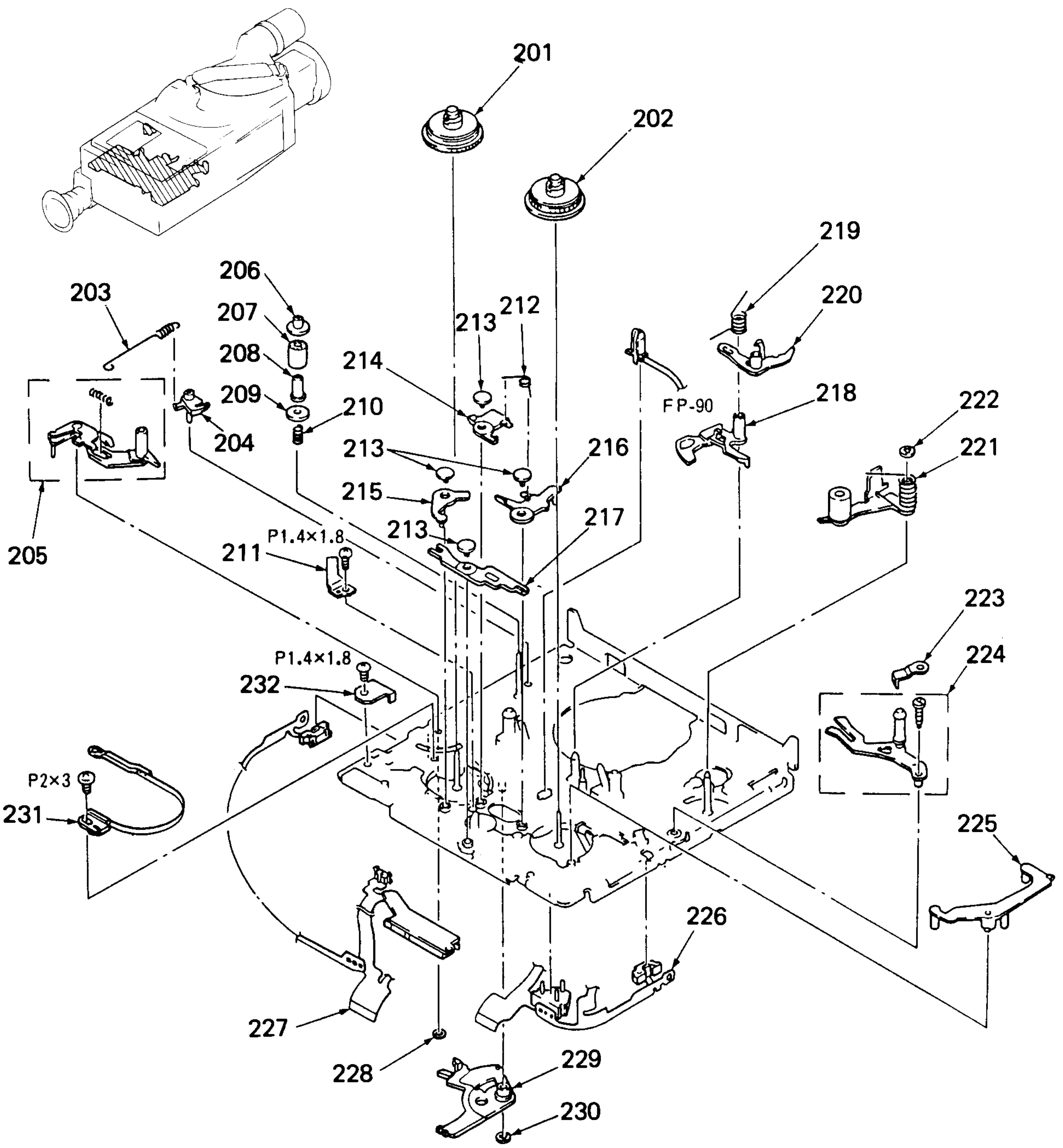
164
154
155
P2×3
P2×3
165

Ref.No	Part No.	Description	Remark
151	X-3726-854-3	CASSETTE COMPARTMENT ASSY (N)	152-155
152	3-728-825-03	SPRING, TENSION	
153	*3-728-829-01	TAPE	
154	3-728-867-02	DAMPER, OIL	
155	3-728-828-02	GEAR, DAMPER	
156	3-728-868-01	GUARD, GUIDE	
157	A-7048-297-A	DRUM, ASSY (DGU-50A-R)	158-160
158	3-686-403-01	SCREW +P (M2X5)	
159	A-7049-267-A	DRUM ASSY, ROTARY (UPPER) (DGR-50-R)	
160	3-895-823-01	SCREW (P1.4X2.5) TAPPING	
161	1-535-739-21	TERMINAL, SHAFT EARTH	
162	A-7040-160-A	MOTOR ASSY, THREADING (LOADING) (M903)	
163	1-808-505-12	SENSOR (DEW)	
164	A-7040-161-B	ROLLER BLOCK ASSY, HC	
165	8-835-331-01	MOTOR, DC-22A (CAPSTAN) (M902)	

5-5. MECHANICAL ASSEMBLY (2)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P1.4×1.8
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224
P1.4×1.8
232
P2×3
231
225
226
227
228
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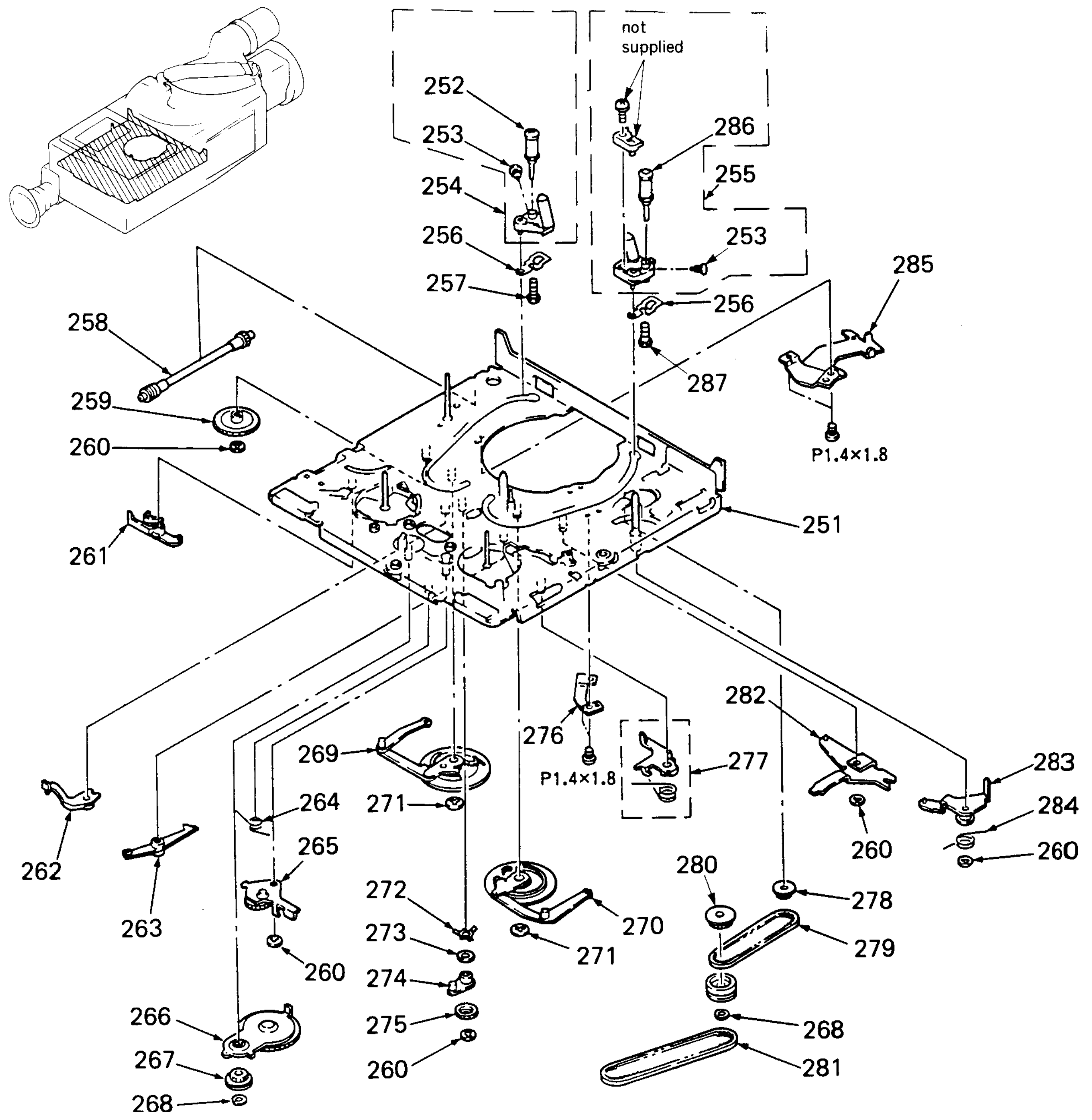
230

Ref.No	Part No.	Description	Remark
201	X-3726-821-2	TABLE ASSY, REEL, S	
202	X-3726-825-4	TABLE ASSY, REEL, T	
203	3-728-995-01	SPRING, TENSION	
204	3-728-855-03	ARM, ADJUSTMENT	
205	X-3726-832-3	ARM ASSY, TENSION REGULATOR	
206	3-726-884-01	FLANGE, UPPER, TG2	
207	3-726-883-01	ROLLER, TG2	
208	3-726-885-01	SLEEVE, TG2	
209	3-726-882-02	FLANGE, LOWER, TG2	
210	3-726-886-01	SPRING, COMPRESSION	
211	3-726-848-01	RETAINER, TL	
212	3-726-866-01	SPRING (ST), TORSION	
213	3-726-858-01	PIN, SHAFT RETAINER	
214	3-728-849-01	BRAKE, S	
215	3-726-852-01	BRAKE, LB	
216	3-728-850-01	BRAKE, T	
217	3-726-853-01	LEVER, LB	
218	3-728-875-01	STOPPER, RK	
219	3-726-864-01	SPRING (RK), TORSION	
220	3-728-852-02	ARM, RK STOPPER	
221	A-7040-163-B	ARM BLOCK ASSY, PINCH	
222	3-669-465-00	WASHER (1.5), STOPPER	
223	3-728-808-01	SPRING, LEAF	
224	X-3726-822-1	ARM ASSY, TG7	
225	3-728-848-01	ARM, LB RELEASE	
226	1-628-061-12	FP-90 FLRXIBLE BOARD	
227	1-628-060-12	FP-89 FLEXIBLE BOARD	
228	3-321-393-11	WASHER, STOPPER	
229	X-3726-806-2	LEVER ASSY, SW	
230	3-726-829-01	WASHER, STOPPER	
231	X-3726-809-1	BAND ASSY, TENSION REGULATOR	
232	3-730-125-01	RETAINER, SW	

5-6. MECHANICAL ASSEMBLY (3)



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P1.4×1.8
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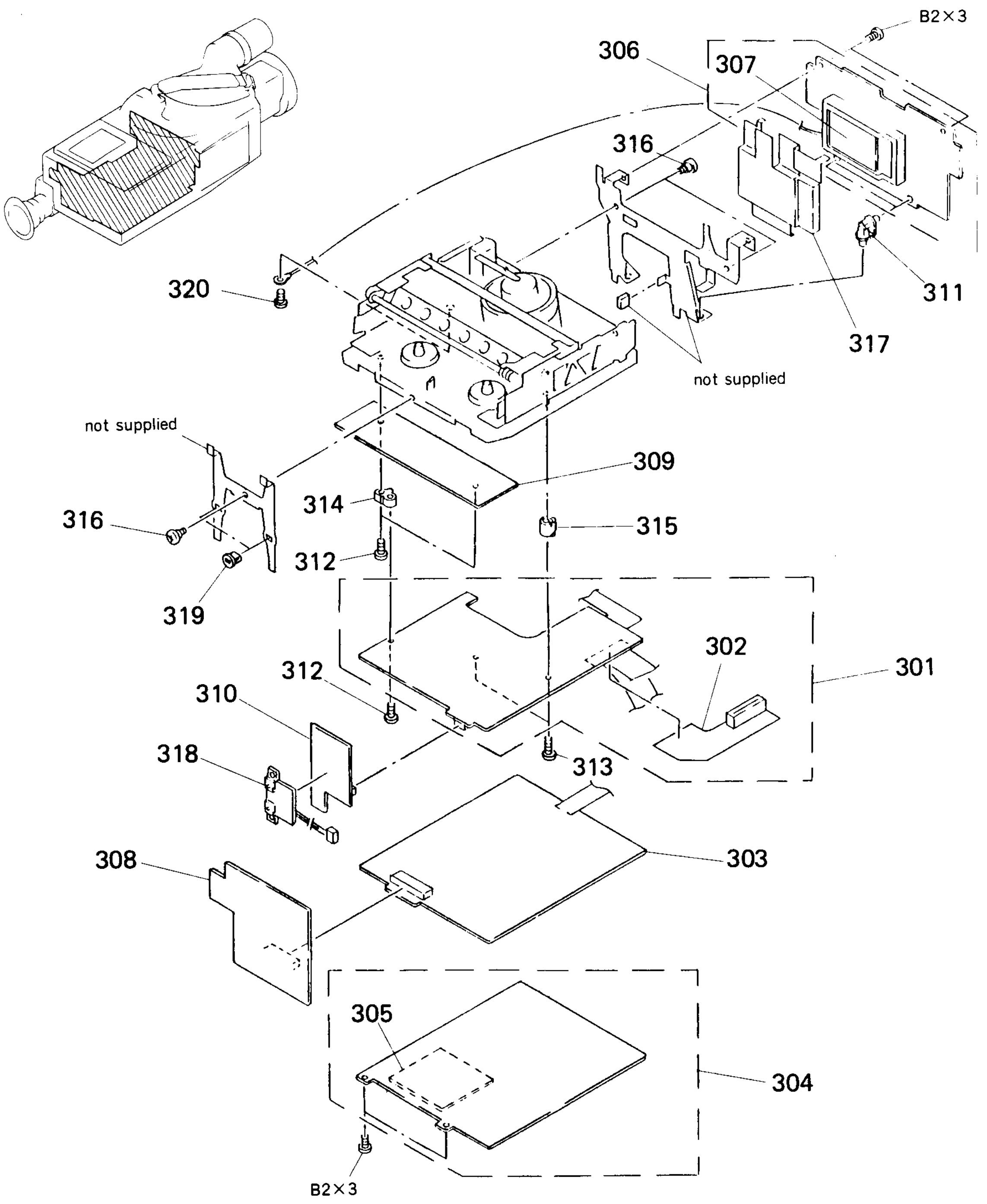
268

Ref.No	Part No.	Description	Remark
251	X-3726-834-4	CHASSIS ASSY, MECHANICAL	
252	X-3726-879-1	ROLLER ASSY ((U)-NB), GUIDE	
253	3-726-822-01	SCREW (M1.4X2)(STEP), HEAD	
254	A-7040-176-A	COASTER (LEFT) BLOCK ASSY	252, 253
255	A-7040-179-A	COASTER (RIGHT) BLOCK ASSY (N)	253, 286
256	3-726-820-02	SPRING, LEAF	
257	3-726-830-01	SCREW (M1.4X4) (THREE LOCK)	
258	X-3726-807-1	WORM ASSY	
259	3-726-826-01	GEAR, WHEEL	
260	3-726-829-01	WASHER, STOPPER	
261	3-728-842-01	LEVER, EJECT	
262	3-728-851-01	BRAKE, UL	
263	3-726-854-01	ARM, BRAKE RELEASE	
264	3-726-865-01	SPRING, (LB), TORSION	
265	A-7040-130-A	GEAR BLOCK ASSY, LB	
266	X-3726-802-2	GEAR ASSY, RK	
267	X-3726-812-1	GEAR ASSY, RC	
268	3-321-393-11	WASHER, STOPPER	
269	X-3726-830-2	GEAR (LEFT) ASSY, DRIVE	

Ref.No	Part No.	Description	Remark
270	X-3726-831-2	GEAR (RIGHT) ASSY, DRIVE	
271	3-669-465-00	WASHER (1.5), STOPPER	
272	3-726-867-01	SRING, LEAF	
273	3-701-436-21	WASHER, POLYETHYLENE	
274	3-726-857-01	ARM, UL	
275	3-726-856-02	GEAR, UL	
276	*3-726-805-01	REINFORCEMENT (TT)	
277	X-3726-808-2	BRAKE ASSY, TS	
278	X-3726-805-1	GEAR ASSY, JOINT	
279	3-728-866-01	BELT (S), TIMING	
280	X-3726-813-	PULLEY (UPPER) ASSY, MIDWAY	
281	3-728-865-01	BELT (L), TIMING	
282	X-3726-804-1	LEVER ASSY, THREADING	
283	X-3726-824-1	ARM ASSY, PINCH SUB	
284	3-726-895-01	SPRING	
285	X-3726-841-1	REINFORCEMENT (SS) ASSY	
286	X-3726-864-1	ROLLER ASY (U)-BS, GUIDE	
287	3-730-140-11	SCREW (M1.2X4)	

5-7. MAIN BOARD ASSEMBLY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303
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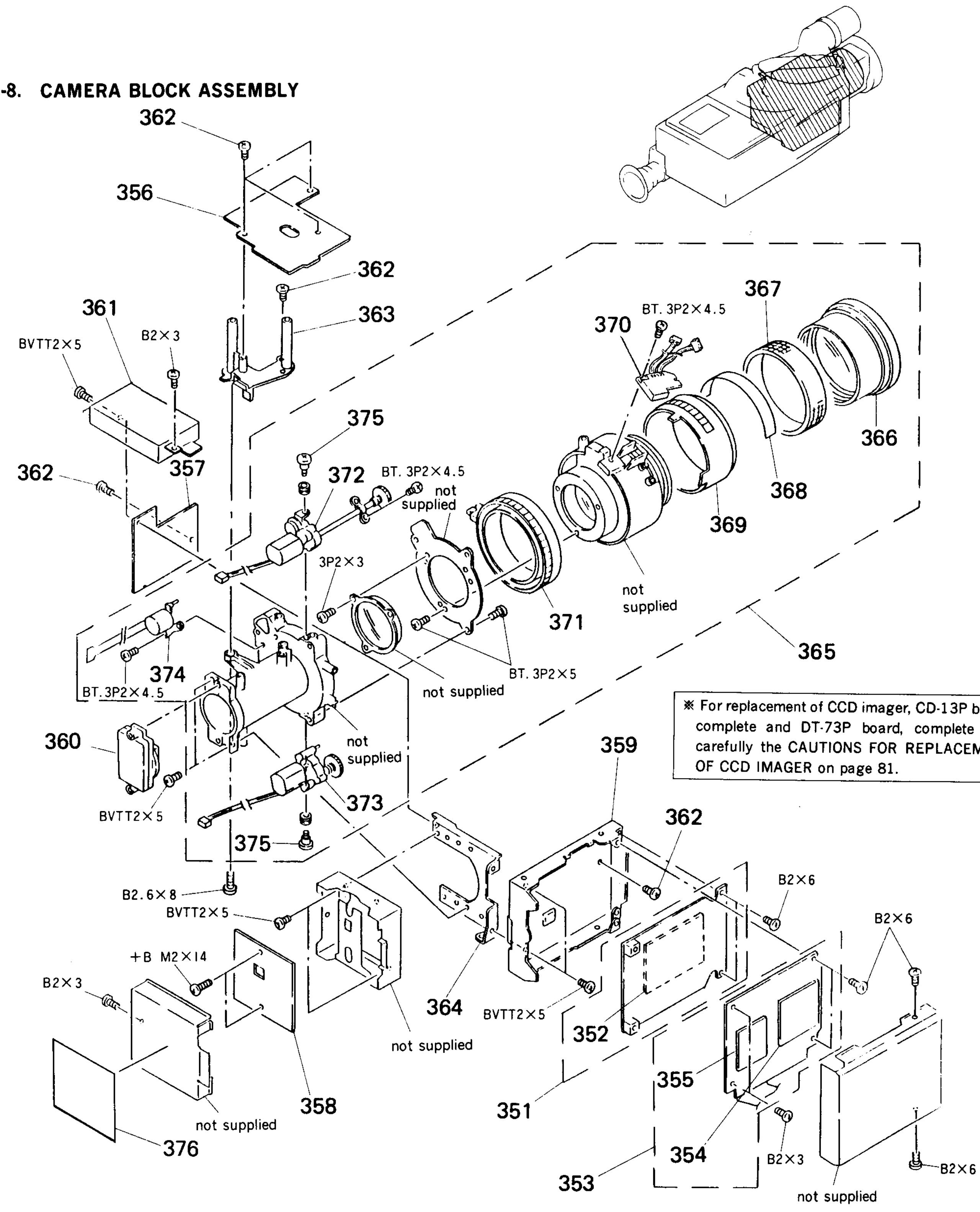
304
B2×3

Ref.No	Part No.	Description	Remark
301	*A-7061-752-A	SS-88P BOARD, COMPLETE	302
302	1-629-194-11	FP-161 FLEXIBLE BOARD	
303	*A-7061-753-A	VI-71 BOARD, COMPLETE (AEP/UK MODEL)	
	*A-7061-943-A	VI-71 BOARD, COMPLETE (AUS/E MODEL)	
304	*A-7061-754-A	VI-72 BOARD, COMPLETE	305
305	A-7068-154-A	HD-8P BOARD, COMPLETE (HIC)	
306	*A-7061-755-A	MR-20 BOARD, COMPLETE	307
307	A-7068-155-A	HR-3P BOARD, COMPLETE (HIC)	
308	*A-7061-756-A	AT-7P BOARD, COMPLETE (AEP/UK MODEL)	
	*A-7061-976-A	AT-7P BOARD, COMPLETE (AUS/E MODEL)	
309	*A-7070-924-A	CC-18P BOARD, COMPLETE	
310	*1-629-173-21	FU-66P BOARD	
311	*3-732-776-01	HINGE (C), PC BOARD	
312	3-713-790-01	SCREW (M2X5), TAPPING, P3	
313	3-713-790-31	SCREW (M2X8), TAPPING, P3	
314	3-732-766-01	SPACER (A), PC BOARD	
315	3-732-767-01	SPACER (B), PC BOARD	
316	3-732-791-01	SCREW (M2X3)	
317	*3-732-793-01	LID, RP	
318	1-535-658-11	TERMINAL BOARD (BATTERY TERMINAL)	
319	3-732-790-01	STOPPER, PC BOARD	
320	3-703-502-01	SCREW	

5-8. CAMERA BLOCK ASSEMBLY


362
356
362
363
361
BVTT2×5
B2×3
367
370
BT. 3P2×4.5
375
366
362
357
372
BT. 3P2×4.5
not supplied
368
369
3P2×3
not supplied
371
365
374
BT. 3P2×4.5
BT. 3P2×5
not supplied
360
not supplied
359
BVTT2×5
373
362
375
B2×6
B2.6×8
BVTT2×5
B2×6
+B M2×14
B2×3
364
BVTT2×5
352
not supplied
355
358
351
not supplied
376
354
B2×3
B2×6
353
not supplied

※ For replacement of CCD imager, CD-13P board, complete and DT-73P board, complete read carefully the CAUTIONS FOR REPLACEMENT OF CCD IMAGER on page 81.

Ref.No	Part No.	Description	Remark
351	*A-7061-757-A	VC-54P BOARD, COMPLETE	352
352	A-7068-143-A	DT-73P BOARD, COMPLETE (HIC)	
353	*A-7061-758-A	VC-55P BOARD, COMPLETE	354, 355
354	A-7068-144-A	MX-7P BOARD, COMPLETE (HIC)	
355	A-7068-145-A	CP-20P BOARD, COMPLETE (HIC)	
356	*A-7061-759-B	AF-47P BOARD, COMPLETE	
357	*A-7061-760-A	DM-23P BOARD, COMPLETE	
358	*A-7070-926-A	CD-13P BOARD, COMPLETE	
359	*X-3732-708-1	CASE ASSY, SHIELD, CAMERA	
360	※8-750-011-12	IU024AN-10C (CCD IMAGER)	
361	1-466-063-21	UNIT, DC-DC CONVERTER	
362	3-727-903-01	SCREW (2X5), TAPPING, +B	
363	3-732-723-01	SUPPORT, LENS	
364	*3-732-773-01	BRACKET, CCD	
365	1-547-334-13	LENS, ZOOM (VCL-1108YB)	366-375
366	3-707-577-01	RING UNIT, F	
367	3-707-575-01	RUBBER, FOCUS	
368	3-707-579-01	FITTING TAPE, F	
369	3-707-578-01	SCALE RING, F	
370	3-707-763-01	SENSOR ASSY, F	
371	3-707-582-01	RING ASSY, ZOOM	
372	3-707-576-01	MOTOR ASSY, AF GEAR (FOCUS)	
373	3-707-580-01	MOTOR ASSY, PZ GEAR (ZOOM)	
374	3-707-583-01	METER ASSY, EE (IRIS)	
375	3-707-501-01	SCREW, (Z) MOTOR FITTING	
376	*3-734-466-01	INSULATOR (B), CAMERA	

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
	*A-7061-752-A	SS-88P BOARD, COMPLETE			
		******************			
					(Ref. No.1000series)
	1-629-193-11	FP-161 FLEXIBLE BOARD			

CONNECTOR

Ref.No	Part No.	Description
CN001	1-562-880-11	CONNECTOR, CARD EDGE 15P

SS-88P BOARD

CAPACITOR

Ref.No	Part No.	Description			Remark
C001	1-135-157-21	TANTAL. CHIP	10MF	20%	6.3V
C002	1-135-157-21	TANTAL. CHIP	10MF	20%	6.3V
C003	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C004	1-135-155-21	TANTAL. CHIP	4.7MF	20%	16V
C005	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C006	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C007	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C008	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C009	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C010	1-135-162-21	TANTAL. CHIP	33MF	20%	6.3V
C011	1-135-155-21	TANTAL. CHIP	4.7MF	20%	16V
C012	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C013	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C014	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C015	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C016	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C017	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C018	1-135-072-21	TANTAL. CHIP	0.22MF	20%	35V
C019	1-163-009-11	CERAMIC CHIP	0.001MF		50V
C030	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C200	1-135-157-21	TANTAL. CHIP	10MF	20%	6.3V
C202	1-135-149-21	TANTAL. CHIP	2.2MF	20%	10V
C203	1-135-157-21	TANTAL. CHIP	10MF	20%	6.3V
C204	1-124-779-00	ELECT CHIP	10MF	20%	16V
C205	1-124-779-00	ELECT CHIP	10MF	20%	16V
C206	1-135-147-21	TANTAL. CHIP	1MF	20%	20V
C207	1-135-147-21	TANTAL. CHIP	1MF	20%	20V
C208	1-124-779-00	ELECT CHIP	10MF	20%	16V
C209	1-135-159-21	TANTAL. CHIP	10MF	20%	16V
C211	1-127-539-11	ELECT(SOLID)	1MF	20%	25V
C212	1-135-147-21	TANTAL. CHIP	1MF	20%	20V
C213	1-135-154-21	TANTAL. CHIP	3.3MF	20%	20V
C214	1-162-638-11	CERAMIC CHIP	1MF		16V
C215	1-124-779-00	ELECT CHIP	10MF	20%	16V
C216	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C217	1-164-330-21	CERAMIC CHIP	0.22MF	10%	16V
C218	1-164-330-21	CERAMIC CHIP	0.22MF	10%	16V
C219	1-164-330-21	CERAMIC CHIP	0.22MF	10%	16V
C220	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C221	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V
C222	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C223	1-136-718-11	ELECT	0.1MF	5%	25V
C224	1-124-589-11	ELECT	47MF	20%	16V
C225	1-127-558-11	ELECT(SOLID)	10MF	20%	10V
C226	1-163-023-00	CERAMIC CHIP	0.015MF		50V
C227	1-135-070-00	TANTAL. CHIP	0.1MF	20%	35V
C228	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C229	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C230	1-135-070-00	TANTAL. CHIP	0.1MF	20%	35V
C231	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C232	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C233	1-127-558-11	ELECT(SOLID)	10MF	20%	10V
C234	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C235	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C236	1-127-558-11	ELECT(SOLID)	10MF	20%	10V
C237	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C238	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C239	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C240	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C241	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C242	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C243	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C244	1-135-154-21	TANTAL. CHIP	3.3MF	20%	20V
C245	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C246	1-163-038-00	CERAMIC CHIP	0.1MF		25V

CONNECTOR

Ref.No	Part No.	Description
CN002	1-565-527-11	PIN, CONNECTOR (PC BOARD) 2P
CN003	1-565-527-11	PIN, CONNECTOR (PC BOARD) 2P
CN004	*1-568-110-11	CONNECTOR, BOARD TO BOARD 6P
CN201	1-565-529-21	PIN, CONNECTOR (PC BOARD) 4P
CN202	1-565-529-21	PIN, CONNECTOR (PC BOARD) 4P

DIODE

Ref.No	Part No.	Description
D005	8-719-941-86	DIODE DAN202U
D010	8-719-105-28	DIODE RD2.4M-B
D200	8-719-938-75	DIODE SB05-05CP
D201	8-719-938-75	DIODE SB05-05CP
D202	8-719-941-09	DIODE DAP202U

IC

Ref.No	Part No.	Description
IC001	8-752-811-58	IC CXP80116-157Q
IC002	8-759-804-72	IC LB1631M
IC003	8-759-013-22	IC LM358MR
IC200	8-759-107-68	IC CX20115A
IC201	8-759-202-45	IC CX20114
IC202	8-759-805-06	IC CXA1127M
IC203	8-759-100-94	IC UPC358G2
IC204	8-759-945-17	IC MB3775PF

COIL

Ref.No	Part No.	Description
L001	1-412-058-11	INDUCTOR CHIP 10UH
L200	1-412-058-11	INDUCTOR CHIP 10UH
L201	1-424-104-11	COIL, CHOKE 10UH
L202	1-424-106-11	COIL, CHOKE 47UH
L203	1-424-105-11	COIL, CHOKE 22UH

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q001	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q003	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q005	8-729-907-00	TRANSISTOR DTC114EU	
Q006	8-729-104-93	TRANSISTOR 2SB1040A-3	
Q007	8-729-905-35	TRANSISTOR 2SC4081-R	
Q008	8-729-905-35	TRANSISTOR 2SC4081-R	
Q011	8-729-907-03	TRANSISTOR FMG5	
Q012	8-729-402-42	TRANSISTOR UN5213	
Q013	8-729-907-26	TRANSISTOR IMX1	
Q014	8-729-905-35	TRANSISTOR 2SC4081-R	
Q200	8-729-403-35	TRANSISTOR UN5113	
Q201	8-729-905-23	TRANSISTOR 2SA1576-R	
Q202	8-729-905-35	TRANSISTOR 2SC4081-R	
Q203	8-729-403-35	TRANSISTOR UN5113	
Q204	8-729-905-61	TRANSISTOR DTC124EU	
Q205	8-729-402-42	TRANSISTOR UN5213	
Q206	8-729-905-35	TRANSISTOR 2SC4081-R	
Q207	8-729-805-25	TRANSISTOR 2SB1121	
Q208	8-729-119-83	TRANSISTOR 2SC4175-B3	
Q209	8-729-805-25	TRANSISTOR 2SB1121	
Q210	8-729-119-83	TRANSISTOR 2SC4175-B3	
Q211	8-729-402-42	TRANSISTOR UN5213	
Q212	8-729-920-39	TRANSISTOR IMT1US	
Q213	8-729-402-42	TRANSISTOR UN5213	
Q214	8-729-901-04	TRANSISTOR DTA114EK	
Q215	8-729-403-35	TRANSISTOR UN5113	

RESISTOR

Ref.No	Part No.	Description			Remark
R001	1-216-095-00	METAL GLAZE	82K	5%	1/10W
R005	1-216-095-00	METAL GLAZE	82K	5%	1/10W
R006	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R010	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R011	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R013	1-216-025-00	METAL GLAZE	100	5%	1/10W
R014	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R015	1-216-043-00	METAL GLAZE	560	5%	1/10W
R019	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R020	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R021	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R022	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R023	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R024	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R025	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R026	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R027	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R028	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R029	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R030	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R031	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R032	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R033	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R034	1-216-037-00	METAL GLAZE	330	5%	1/10W
R035	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R036	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R037	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R038	1-216-699-11	METAL CHIP	100K	0.50%	1/10W
R039	1-216-699-11	METAL CHIP	100K	0.50%	1/10W
R040	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R041	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R042	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R043	1-216-093-00	METAL GLAZE	68K	5%	1/10W
R044	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R045	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R046	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R047	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R052	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R053	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R054	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R055	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R056	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R059	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R060	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R200	1-216-113-00	METAL GLAZE	470K	5%	1/10W
R203	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R204	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R205	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R206	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R208	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R209	1-216-101-00	METAL GLAZE	150K	5%	1/10W
R210	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R211	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R212	1-216-025-00	METAL GLAZE	100	5%	1/10W
R213	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R216	1-216-045-00	METAL GLAZE	680	5%	1/10W
R217	1-216-035-00	METAL GLAZE	270	5%	1/10W
R218	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W
R219	1-216-298-00	METAL GLAZE	2.2	5%	1/10W
R220	1-216-298-00	METAL GLAZE	2.2	5%	1/10W
R221	1-216-298-00	METAL GLAZE	2.2	5%	1/10W
R222	1-216-691-11	METAL CHIP	47K	0.50%	1/10W
R223	1-216-691-11	METAL CHIP	47K	0.50%	1/10W
R224	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R225	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R227	1-216-101-00	METAL GLAZE	150K	5%	1/10W
R228	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R229	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R230	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R231	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R232	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R233	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R234	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R235	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R236	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W
R237	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W
R238	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W
R239	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W
R240	1-216-033-00	METAL GLAZE	220	5%	1/10W
R241	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R242	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R243	1-216-045-00	METAL GLAZE	680	5%	1/10W
R244	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R245	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R246	1-216-045-00	METAL GLAZE	680	5%	1/10W
R247	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R248	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R249	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R250	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R251	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R252	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R253	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R254	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R260	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R281	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R282	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W
R283	1-217-671-11	METAL GLAZE	1	5%	1/10W
R284	1-217-671-11	METAL GLAZE	1	5%	1/10W
R285	1-217-671-11	METAL GLAZE	1	5%	1/10W
R286	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
R287	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R288	1-216-073-00	METAL GLAZE	10K	5%	1/10W

VARIABLE RESISTOR

Ref.No	Part No.	Description
RV001	1-238-225-11	RES, ADJ, METAL GLAZE 47K
RV002	1-238-226-11	RES, ADJ, METAL GLAZE 100K
RV201	1-230-869-11	RES, ADJ, METAL GLAZE 4.7K
RV202	1-230-870-11	RES, ADJ, METAL GLAZE 10K

THERMISTOR

Ref.No	Part No.	Description
TH001	1-800-200-00	THERMISTOR
TH201	1-807-752-11	THERMISTOR

TESTPOINT

Ref.No	Part No.	Description
TP001	*1-535-622-11	PIN, TERMINAL
TP002	*1-535-622-11	PIN, TERMINAL
TP003	*1-535-622-11	PIN, TERMINAL
TP004	*1-535-622-11	PIN, TERMINAL
TP005	*1-535-622-11	PIN, TERMINAL
TP006	*1-535-622-11	PIN, TERMINAL
TP007	*1-535-622-11	PIN, TERMINAL
TP008	*1-535-622-11	PIN, TERMINAL

CRYSTAL

Ref.No	Part No.	Description
X001	1-577-116-21	VIBRATOR, CRYSTAL (16MHz)

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*A-7061-753-A VI-71 BOARD, COMPLETE (AEP/UK)
****

*A-7061-943-A VI-71 BOARD, COMPLETE (AUS/E)
****
(Ref. No. 6000series)

1-574-479-11 CABLE, FLAT (1.0MM PITCH) 31P

CAPACITOR

Ref.No	Part No.	Description			Remark
C201	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C202	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C203	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C204	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C205	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C206	1-163-986-00	CERAMIC CHIP	0.027MF	10%	25V
C207	1-162-938-11	CERAMIC CHIP	7PF	0.5PF	50V
C208	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C209	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C402	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C403	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C405	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C406	1-135-072-21	TANTAL. CHIP	0.22MF	20%	35V
C407	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C408	1-135-072-21	TANTAL. CHIP	0.22MF	20%	35V
C409	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C411	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C412	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C413	1-135-155-21	TANTAL. CHIP	4.7MF	20%	10V
C414	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C415	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V
C416	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C417	1-162-997-11	CERAMIC CHIP	10PF	0.5PF	50V
C418	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C419	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C420	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C421	1-162-974-11	CERAMIC CHIP	0.01MF		50V

Ref.No	Part No.	Description			Remark
C422	1-135-159-21	TANTAL. CHIP	10MF	20%	16V
C426	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C427	1-135-150-21	TANTAL. CHIP	3.3MF	20%	6.3V
C429	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C430	1-135-155-21	TANTAL. CHIP	4.7MF	20%	10V
C431	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C433	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C434	1-135-149-21	TANTAL. CHIP	2.2MF	20%	6.3V
C435	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C436	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C437	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C438	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C439	1-162-964-11	CERAMIC CHIP	0.001MF	10%	50V
C442	1-135-150-21	TANTAL. CHIP	3.3MF	20%	6.3V
C443	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C444	1-135-155-21	TANTAL. CHIP	4.7MF	20%	10V
C445	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C447	1-135-155-21	TANTAL. CHIP	4.7MF	20%	10V
C448	1-135-162-21	TANTAL. CHIP	33MF	20%	4V
C449	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C450	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C452	1-126-603-11	ELECT CHIP	4.7MF	20%	35V
C453	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C454	1-126-603-11	ELECT CHIP	4.7MF	20%	35V
C456	1-135-155-21	TANTAL. CHIP	4.7MF	20%	10V
C457	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C458	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C459	1-126-603-11	ELECT CHIP	4.7MF	20%	35V
C460	1-135-155-21	TANTAL. CHIP	4.7MF	20%	10V
C461	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C462	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C463	1-162-964-11	CERAMIC CHIP	0.001MF	10%	50V
C464	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C465	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C466	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C467	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C468	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C469	1-135-157-21	TANTAL. CHIP	10MF	20%	4V
C470	1-135-157-21	TANTAL. CHIP	10MF	20%	4V
C471	1-135-072-21	TANTAL. CHIP	0.22MF	20%	35V
C472	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C473	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C474	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C475	1-126-207-11	ELECT CHIP	33MF	20%	4V
C476	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C477	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C478	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C479	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C480	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C481	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C482	1-162-948-11	CERAMIC CHIP	39PF	5%	50V
C483	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C485	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C486	1-135-155-21	TANTAL. CHIP	4.7MF	20%	10V
C487	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C488	1-135-155-21	TANTAL. CHIP	4.7MF	20%	10V
C489	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C490	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C491	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C492	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C493	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C494	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C495	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C496	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C497	1-162-942-11	CERAMIC CHIP	12PF	5%	50V

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
C498	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C499	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C500	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C501	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C502	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C505	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C506	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C507	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C510	1-162-956-11	CERAMIC CHIP	180PF	5%	50V
C512	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V
C513	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C514	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C515	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C516	1-162-955-11	CERAMIC CHIP	150PF	5%	50V
C517	1-162-955-11	CERAMIC CHIP	150PF	5%	50V
C518	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C519	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C520	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C522	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C524	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C525	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C526	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C527	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C528	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C529	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C531	1-162-955-11	CERAMIC CHIP	150PF	5%	50V
C532	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C533	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C534	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C535	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V
C536	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V
C537	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C540	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C541	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C542	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C545	1-162-964-11	CERAMIC CHIP	0.001MF	10%	50V
C547	1-162-946-11	CERAMIC CHIP	27PF	5%	50V

CONNECTOR

Ref.No	Part No.	Description
CN401	1-568-111-11	CONNECTOR, BOARD TO BOARD 22P
CN403	1-568-124-11	CONNECTOR,FPC(DIP TYPE ZIF)20P
CN404	*1-566-765-11	PIN, CONNECTOR (PC BOARD) 10P
CN405	*1-566-766-11	PIN, CONNECTOR (PC BOARD) 11P
CN406	*1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P

VARIABLE CAPACITOR

Ref.No	Part No.	Description
CV401	1-141-331-11	CAP, VAR, TRIMMER (CHIP)
CV402	1-141-331-11	CAP, VAR, TRIMMER (CHIP)

DIODE

Ref.No	Part No.	Description	Remark
D201	8-719-941-09	DIODE DAP202U	
D202	8-719-941-86	DIODE DAN202U	
D203	8-719-123-83	DIODE 1SS303	
D204	8-719-123-85	DIODE 1SS304	
D205	8-719-123-85	DIODE 1SS304	
D206	8-719-123-85	DIODE 1SS304	
D401	8-719-123-85	DIODE 1SS304	
D402	8-719-123-85	DIODE 1SS304	
D404	8-719-123-85	DIODE 1SS304	
D405	8-719-123-85	DIODE 1SS304	
D406	8-719-941-09	DIODE DAP202U	
D407	8-719-123-85	DIODE 1SS304	
D409	8-719-123-85	DIODE 1SS304	
D411	8-719-949-71	DIODE 1T32	
D413	8-719-123-85	DIODE 1SS304	
D414	8-719-123-85	DIODE 1SS304	
D417	8-719-123-85	DIODE 1SS304	
D418	8-719-800-76	DIODE 1SS226	
D419	8-719-123-85	DIODE 1SS304	
D420	8-719-123-85	DIODE 1SS304	
D421	8-719-123-85	DIODE 1SS304	
D422	8-719-123-85	DIODE 1SS304	
D423	8-719-123-85	DIODE 1SS304	
D424	8-719-123-85	DIODE 1SS304	
D425	8-719-123-85	DIODE 1SS304	

FILTER

Ref.No	Part No.	Description
FL401	1-236-540-11	LPF (DEMOD OUT)
FL402	1-236-539-11	LPF (REC Y)

IC

Ref.No	Part No.	Description
IC401	8-759-710-10	IC NJM2233M (AUS/E)
IC403	8-759-710-29	IC NJM2235M
IC404	8-759-710-29	IC NJM2235M
IC405	8-759-009-22	IC MC14094BF
IC406	8-759-970-80	IC MB673198U
IC407	8-759-140-26	IC UPD6145G-601
IC408	8-759-710-12	IC NJM2230M
IC409	8-752-031-01	IC CXA1047M
IC410	8-752-032-97	IC CXA1230AR

COIL

Ref.No	Part No.	Description	
L201	1-410-391-11	INDUCTOR CHIP	68UH
L401	1-412-058-11	INDUCTOR CHIP	10UH
L402	1-408-797-11	INDUCTOR CHIP	470UH
L403	1-410-390-11	INDUCTOR CHIP	56UH
L404	1-410-382-31	INDUCTOR CHIP	12UH
L405	1-410-380-31	INDUCTOR CHIP	8.2UH
L406	1-410-390-11	INDUCTOR CHIP	56UH
L407	1-410-387-11	INDUCTOR CHIP	33UH
L408	1-412-058-11	INDUCTOR CHIP	10UH
L409	1-408-791-00	INDUCTOR CHIP	150UH
L410	1-410-392-11	INDUCTOR CHIP	82UH
L411	1-410-386-11	INDUCTOR CHIP	27UH
L412	1-410-380-31	INDUCTOR CHIP	8.2UH
L413	1-412-058-11	INDUCTOR CHIP	10UH
L414	1-412-058-11	INDUCTOR CHIP	10UH
L416	1-410-393-11	INDUCTOR CHIP	100UH
L417	1-410-391-11	INDUCTOR CHIP	68UH
L419	1-410-378-11	INDUCTOR CHIP	5.6UH
L421	1-410-382-31	INDUCTOR CHIP	12UH

TRANSISTOR

Ref.No	Part No.	Description
Q201	8-729-117-16	TRANSISTOR 2SA1611-M6
Q202	8-729-421-23	TRANSISTOR XN1216
Q203	8-729-216-22	TRANSISTOR 2SA1162
Q204	8-729-421-23	TRANSISTOR XN1216
Q205	8-729-117-16	TRANSISTOR 2SA1611-M6
Q206	8-729-905-18	TRANSISTOR DTC144EU
Q207	8-729-117-32	TRANSISTOR 2SC4177
Q209	8-729-117-32	TRANSISTOR 2SC4177
Q210	8-729-403-35	TRANSISTOR UN5113
Q211	8-729-905-18	TRANSISTOR DTC144EU
Q212	8-729-905-96	TRANSISTOR DTA114TU
Q213	8-729-905-18	TRANSISTOR DTC144EU
Q214	8-729-905-09	TRANSISTOR DTA144WU
Q215	8-729-905-12	TRANSISTOR DTA144EU
Q216	8-729-905-18	TRANSISTOR DTC144EU
Q217	8-729-905-12	TRANSISTOR DTA144EU
Q220	8-729-905-23	TRANSISTOR 2SA1576T-R
Q221	8-729-117-32	TRANSISTOR 2SC4177

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
Q225	8-729-905-18	TRANSISTOR DTC144EU	
Q226	8-729-905-09	TRANSISTOR DTA144WU	
Q228	8-729-905-18	TRANSISTOR DTC144EU	
Q229	8-729-905-09	TRANSISTOR DTA144WU	
Q402	8-729-905-57	TRANSISTOR DTA124EU	
Q403	8-729-905-57	TRANSISTOR DTA124EU	
Q404	8-729-905-18	TRANSISTOR DTC144EU	
Q406	8-729-905-19	TRANSISTOR DTC114EU (AUS/E)	
Q407	8-729-117-32	TRANSISTOR 2SC4177	
Q408	8-729-905-18	TRANSISTOR DTC144EU	
Q409	8-729-905-18	TRANSISTOR DTC144EU	
Q410	8-729-117-32	TRANSISTOR 2SC4177	
Q411	8-729-403-35	TRANSISTOR UN5113	
Q412	8-729-117-32	TRANSISTOR 2SC4177	
Q415	8-729-905-18	TRANSISTOR DTC144EU	
Q416	8-729-905-18	TRANSISTOR DTC144EU	
Q417	8-729-905-18	TRANSISTOR DTC144EU	
Q418	8-729-905-18	TRANSISTOR DTC144EU	
Q419	8-729-905-18	TRANSISTOR DTC144EU	
Q420	8-729-403-35	TRANSISTOR UN5113	
Q422	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q424	8-729-202-38	TRANSISTOR 2SC3326N	
Q426	8-729-202-38	TRANSISTOR 2SC3326N	
Q427	8-729-117-32	TRANSISTOR 2SC4177	
Q428	8-729-907-40	TRANSISTOR IMD2	
Q429	8-729-117-32	TRANSISTOR 2SC4177	
Q430	8-729-216-22	TRANSISTOR 2SA1162	
Q431	8-729-905-18	TRANSISTOR DTC144EU	
Q432	8-729-905-18	TRANSISTOR DTC144EU	
Q433	8-729-403-35	TRANSISTOR UN5113	
Q434	8-729-117-32	TRANSISTOR 2SC4177	
Q435	8-729-905-18	TRANSISTOR DTC144EU	
Q436	8-729-905-18	TRANSISTOR DTC144EU	
Q437	8-729-905-09	TRANSISTOR DTA144WU	
Q438	8-729-117-32	TRANSISTOR 2SC4177	
Q439	8-729-117-32	TRANSISTOR 2SC4177	
Q440	8-729-117-32	TRANSISTOR 2SC4177	
Q441	8-729-117-32	TRANSISTOR 2SC4177	
Q442	8-729-117-32	TRANSISTOR 2SC4177	
Q443	8-729-905-45	TRANSISTOR DTA143EU	
Q444	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q445	8-729-117-32	TRANSISTOR 2SC4177	
Q446	8-729-117-32	TRANSISTOR 2SC4177	
Q447	8-729-117-32	TRANSISTOR 2SC4177	
Q448	8-729-807-87	TRANSISTOR 2SB1295-UL6	
Q449	8-729-905-18	TRANSISTOR DTC144EU	
Q450	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q451	8-729-117-32	TRANSISTOR 2SC4177	
Q452	8-729-117-32	TRANSISTOR 2SC4177	
Q453	8-729-421-23	TRANSISTOR XN1216	
Q454	8-729-905-18	TRANSISTOR DTC144EU	
Q455	8-729-403-35	TRANSISTOR UN5113	
Q456	8-729-117-32	TRANSISTOR 2SC4177	
Q460	8-729-117-32	TRANSISTOR 2SC4177	
Q461	8-729-403-07	TRANSISTOR XN1213	
Q462	8-729-905-18	TRANSISTOR DTC144EU	
Q463	8-729-403-35	TRANSISTOR UN5113	
Q464	8-729-117-32	TRANSISTOR 2SC4177	
Q465	8-729-117-32	TRANSISTOR 2SC4177	
Q466	8-729-117-32	TRANSISTOR 2SC4177	
Q467	8-729-905-18	TRANSISTOR DTC144EU	
Q468	8-729-905-18	TRANSISTOR DTC144EU	
Q469	8-729-216-22	TRANSISTOR 2SA1162	
Q470	8-729-117-32	TRANSISTOR 2SC4177	
Q471	8-729-905-18	TRANSISTOR DTC144EU	
Q472	8-729-216-22	TRANSISTOR 2SA1162	
Q473	8-729-102-06	TRANSISTOR 2SC2223	
Q474	8-729-102-06	TRANSISTOR 2SC2223	
Q475	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q476	8-729-117-32	TRANSISTOR 2SC4177	
Q477	8-729-117-32	TRANSISTOR 2SC4177	
Q478	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q479	8-729-403-35	TRANSISTOR UN5113	
Q480	8-729-905-18	TRANSISTOR DTC144EU	
Q481	8-729-403-35	TRANSISTOR UN5113	
Q482	8-729-905-18	TRANSISTOR DTC144EU	
Q483	8-729-905-18	TRANSISTOR DTC144EU	
Q485	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q486	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q487	8-729-905-18	TRANSISTOR DTC144EU	
Q488	8-729-905-57	TRANSISTOR DTA124EU	
Q489	8-729-905-57	TRANSISTOR DTA124EU	
Q490	8-729-905-18	TRANSISTOR DTC144EU	
Q491	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q492	8-729-905-18	TRANSISTOR DTC144EU	
Q493	8-729-905-18	TRANSISTOR DTC144EU	
Q497	8-729-905-18	TRANSISTOR DTC144EU	
Q498	8-729-403-35	TRANSISTOR UN5113	
Q499	8-729-403-35	TRANSISTOR UN5113	
Q500	8-729-117-32	TRANSISTOR 2SC4177	
Q501	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q502	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q503	8-729-117-32	TRANSISTOR 2SC4177	
Q504	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q505	8-729-117-32	TRANSISTOR 2SC4177	
Q506	8-729-905-18	TRANSISTOR DTC144EU	
Q507	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q509	8-729-117-32	TRANSISTOR 2SC4177	
Q510	8-729-117-32	TRANSISTOR 2SC4177	
Q513	8-729-403-35	TRANSISTOR UN5113	

RESISTOR

Ref.No	Part No.	Description				Remark
R201	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R202	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R203	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R204	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R205	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R206	1-216-815-11	METAL GLAZE	330	5%	1/16W	
R207	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R208	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R209	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R210	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R211	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R212	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R213	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R215	1-216-843-11	METAL GLAZE	68K	5%	1/16W	
R216	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R217	1-216-842-11	METAL GLAZE	56K	5%	1/16W	
R218	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R219	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R220	1-216-855-11	METAL GLAZE	680K	5%	1/16W	
R221	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R222	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R223	1-216-807-11	METAL GLAZE	68	5%	1/16W	
R224	1-216-842-11	METAL GLAZE	56K	5%	1/16W	
R225	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R226	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R227	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R228	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R229	1-216-842-11	METAL GLAZE	56K	5%	1/16W	
R232	1-216-835-11	METAL GLAZE	15K	5%	1/16W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
R233	1-216-835-11	METAL GLAZE	15K	5%	1/16W
R237	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R238	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R239	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R240	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R241	1-216-864-11	METAL GLAZE (AEP/UK)	0	5%	1/16W
R243	1-216-864-11	METAL GLAZE (AEP/UK)	0	5%	1/16W
R244	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R301	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R302	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R303	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R304	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R306	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W
R307	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R308	1-216-809-11	METAL GLAZE	100	5%	1/16W
R310	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W
R311	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R312	1-216-810-11	METAL GLAZE	120	5%	1/16W
R313	1-216-813-11	METAL GLAZE	220	5%	1/16W
R314	1-216-813-11	METAL GLAZE	220	5%	1/16W
R315	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R316	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R317	1-216-809-11	METAL GLAZE	100	5%	1/16W
R318	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R319	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R320	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R321	1-216-814-11	METAL GLAZE	270	5%	1/16W
R322	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W
R323	1-216-857-11	METAL GLAZE	1M	5%	1/16W
R324	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R325	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W
R326	1-216-839-11	METAL GLAZE	33K	5%	1/16W
R327	1-216-835-11	METAL GLAZE	15K	5%	1/16W
R328	1-216-818-11	METAL GLAZE	560	5%	1/16W
R329	1-216-817-11	METAL GLAZE	470	5%	1/16W
R330	1-216-817-11	METAL GLAZE	470	5%	1/16W
R331	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W
R333	1-216-864-11	METAL GLAZE	0	5%	1/16W
R334	1-216-809-11	METAL GLAZE	100	5%	1/16W
R335	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R337	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R338	1-216-848-11	METAL GLAZE	180K	5%	1/16W
R340	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R341	1-216-864-11	METAL GLAZE	0	5%	1/16W
R342	1-216-809-11	METAL GLAZE	100	5%	1/16W
R352	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R354	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R356	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R357	1-216-817-11	METAL GLAZE	470	5%	1/16W
R358	1-216-817-11	METAL GLAZE	470	5%	1/16W
R359	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R360	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R361	1-216-039-00	METAL GLAZE	390	5%	1/10W
R362	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R363	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R364	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R365	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R366	1-216-820-11	METAL GLAZE	820	5%	1/16W
R367	1-216-816-11	METAL GLAZE	390	5%	1/16W
R368	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R369	1-216-838-11	METAL GLAZE	27K	5%	1/16W
R370	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R371	1-216-295-00	METAL GLAZE	0	5%	1/10W
R372	1-216-043-00	METAL GLAZE	560	5%	1/10W
R373	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R374	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W
R375	1-216-840-11	METAL GLAZE	39K	5%	1/16W
R376	1-216-834-11	METAL GLAZE	12K	5%	1/16W
R377	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R378	1-216-849-11	METAL GLAZE	220K	5%	1/16W
R379	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R380	1-216-849-11	METAL GLAZE	220K	5%	1/16W
R381	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R382	1-216-835-11	METAL GLAZE	15K	5%	1/16W
R386	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R389	1-216-864-11	METAL GLAZE	0	5%	1/16W
R390	1-216-809-11	METAL GLAZE	100	5%	1/16W
R391	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R392	1-216-813-11	METAL GLAZE	220	5%	1/16W
R393	1-216-819-11	METAL GLAZE	680	5%	1/16W
R394	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W
R395	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W
R396	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R397	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W
R398	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R400	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R401	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R402	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R403	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R404	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R405	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R406	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R407	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R408	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W
R409	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R410	1-216-838-11	METAL GLAZE	27K	5%	1/16W
R411	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R412	1-216-838-11	METAL GLAZE	27K	5%	1/16W
R413	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R414	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R415	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R416	1-216-838-11	METAL GLAZE	27K	5%	1/16W
R417	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R418	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R419	1-216-824-11	METAL GLAZE	1.8K	5%	1/16W
R420	1-216-842-11	METAL GLAZE	56K	5%	1/16W
R421	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R422	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R423	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W
R424	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R425	1-216-838-11	METAL GLAZE	27K	5%	1/16W
R426	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R427	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R428	1-216-839-11	METAL GLAZE	33K	5%	1/16W
R429	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R430	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R431	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R432	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R433	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R434	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R435	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R436	1-216-838-11	METAL GLAZE	27K	5%	1/16W
R438	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R440	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R441	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R442	1-216-818-11	METAL GLAZE	560	5%	1/16W
R444	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R445	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R446	1-216-821-11	METAL GLAZE	1K	5%	1/16W

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description				Remark
R447	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R448	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R449	1-216-834-11	METAL GLAZE	12K	5%	1/16W	
R450	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W	
R451	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R452	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R453	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R454	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R455	1-216-848-11	METAL GLAZE	180K	5%	1/16W	
R456	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R457	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R458	1-216-847-11	METAL GLAZE	150K	5%	1/16W	
R459	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R460	1-216-848-11	METAL GLAZE	180K	5%	1/16W	
R461	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R462	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R463	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R464	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R465	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R466	1-216-847-11	METAL GLAZE	150K	5%	1/16W	
R467	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R468	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R469	1-216-851-11	METAL GLAZE	330K	5%	1/16W	
R471	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R472	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R473	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R475	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R476	1-216-023-00	METAL GLAZE	82	5%	1/10W	
R477	1-216-039-00	METAL GLAZE	390	5%	1/10W	
R478	1-216-039-00	METAL GLAZE	390	5%	1/10W	
R479	1-216-842-11	METAL GLAZE	56K	5%	1/16W	
R480	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R481	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R482	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R483	1-216-821-11	METAL GLAZE (AUS/E)	1K	5%	1/16W	
R484	1-216-816-11	METAL GLAZE	390	5%	1/16W	
R485	1-216-834-11	METAL GLAZE	12K	5%	1/16W	
R486	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R487	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R488	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R489	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R490	1-216-842-11	METAL GLAZE	56K	5%	1/16W	
R491	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R492	1-216-843-11	METAL GLAZE	68K	5%	1/16W	
R493	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R494	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R495	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R496	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R498	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R499	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R500	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R501	1-216-824-11	METAL GLAZE	1.8K	5%	1/16W	
R502	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R503	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R504	1-216-834-11	METAL GLAZE	12K	5%	1/16W	
R505	1-216-853-11	METAL GLAZE	470K	5%	1/16W	
R506	1-216-846-11	METAL GLAZE	120K	5%	1/16W	
R507	1-216-847-11	METAL GLAZE	150K	5%	1/16W	
R508	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R509	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R510	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R511	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R512	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R513	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R514	1-216-821-11	METAL GLAZE	1K	5%	1/16W	

Ref.No	Part No.	Description				Remark
R515	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R516	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W	
R517	1-216-834-11	METAL GLAZE	12K	5%	1/16W	
R518	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R519	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R520	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R521	1-216-813-11	METAL GLAZE	220	5%	1/16W	
R522	1-216-813-11	METAL GLAZE	220	5%	1/16W	
R523	1-216-813-11	METAL GLAZE	220	5%	1/16W	
R525	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R526	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R527	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R528	1-216-838-11	METAL GLAZE	27K	5%	1/16W	
R529	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R530	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R531	1-216-838-11	METAL GLAZE	27K	5%	1/16W	
R532	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R533	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R534	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R535	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R536	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R537	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R538	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R539	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R540	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R541	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R543	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R544	1-216-824-11	METAL GLAZE	1.8K	5%	1/16W	
R545	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R546	1-216-814-11	METAL GLAZE	270	5%	1/16W	
R547	1-216-814-11	METAL GLAZE	270	5%	1/16W	
R548	1-216-816-11	METAL GLAZE	390	5%	1/16W	
R549	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R551	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R552	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R553	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R554	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R555	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R556	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R557	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R558	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R559	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R560	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R561	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R562	1-216-815-11	METAL GLAZE	330	5%	1/16W	
R563	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R564	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R565	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R566	1-216-838-11	METAL GLAZE	27K	5%	1/16W	
R567	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R568	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R569	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R570	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R571	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R572	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R579	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R581	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R582	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R583	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R584	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R585	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R586	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R587	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R588	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R590	1-216-864-11	METAL GLAZE	0	5%	1/16W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
R592	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R593	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R594	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R595	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R596	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R597	1-216-841-11	METAL GLAZE	47K	5%	1/16W

VARIABLE RESISTOR

Ref.No	Part No.	Description			Remark
RV401	1-230-867-11	RES, ADJ, METAL GLAZE	1K		
RV404	1-230-868-11	RES, ADJ, METAL GLAZE	2.2K		
RV405	1-230-867-11	RES, ADJ, METAL GLAZE	1K		
RV406	1-230-868-11	RES, ADJ, METAL GLAZE	2.2K		
RV407	1-230-870-11	RES, ADJ, METAL GLAZE	10K		
RV408	1-230-870-11	RES, ADJ, METAL GLAZE	10K		
RV409	1-230-870-11	RES, ADJ, METAL GLAZE	10K		
RV410	1-230-869-11	RES, ADJ, METAL GLAZE	4.7K		
RV416	1-230-870-11	RES, ADJ, METAL GLAZE	10K		
RV417	1-230-874-11	RES, ADJ, METAL GLAZE	100K		

TESTPOINT

Ref.No	Part No.	Description			Remark
TP401	*1-535-622-11	PIN, TERMINAL			
TP402	*1-535-622-11	PIN, TERMINAL			

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*A-7061-754-A VI-72 BOARD, COMPLETE

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(Ref. No. 1000series)

A-7068-154-A HD-8P BOARD, COMPLETE (HIC)

CAPACITOR

Ref.No	Part No.	Description			Remark
C601	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C602	1-163-015-00	CERAMIC CHIP	0.0033MF	10%	50V
C603	1-126-603-11	ELECT CHIP	4.7MF	20%	35V
C604	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C605	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C606	1-162-936-11	CERAMIC CHIP	5PF	0.25PF	50V
C607	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C608	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C609	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C610	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C612	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C613	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C614	1-135-072-21	TANTAL. CHIP	0.22MF	20%	35V
C615	1-135-149-21	TANTAL. CHIP	2.2MF	20%	6.3V
C616	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C617	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C620	1-162-964-11	CERAMIC CHIP	0.001MF	10%	50V
C621	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C622	1-135-170-21	TANTAL. CHIP	6.8MF	20%	4V
C623	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C624	1-135-151-21	TANTAL. CHIP	4.7MF	20%	4V
C625	1-162-961-11	CERAMIC CHIP	330PF	10%	50V
C626	1-162-961-11	CERAMIC CHIP	330PF	10%	50V
C627	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C628	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C629	1-163-108-00	CERAMIC CHIP	43PF	5%	50V
C630	1-135-073-00	TANTAL. CHIP	0.33MF	20%	35V
C631	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C632	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C633	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C634	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C635	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C637	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C638	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C639	1-135-149-21	TANTAL. CHIP	2.2MF	20%	6.3V
C640	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C641	1-135-149-21	TANTAL. CHIP	2.2MF	20%	6.3V
C642	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C643	1-135-181-21	TANTAL. CHIP	4.7MF	20%	6.3V
C644	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C645	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C647	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C648	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C649	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C650	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C651	1-162-965-11	CERAMIC CHIP	0.0015MF	10%	50V
C654	1-162-964-11	CERAMIC CHIP	0.001MF	10%	50V
C655	1-163-118-00	CERAMIC CHIP	110PF	5%	50V
C656	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C657	1-163-205-00	CERAMIC CHIP	0.001MF	5%	50V
C658	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C659	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C660	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C661	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C662	1-162-936-11	CERAMIC CHIP	5PF	0.25PF	50V
C663	1-135-180-21	TANTAL. CHIP	3.3MF	20%	4V
C664	1-135-149-21	TANTAL. CHIP	2.2MF	20%	6.3V
C665	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V
C666	1-162-961-11	CERAMIC CHIP	330PF	10%	50V
C667	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C668	1-162-961-11	CERAMIC CHIP	330PF	10%	50V
C671	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C672	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C675	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C676	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C677	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C678	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C679	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C680	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C682	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C683	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C684	1-126-603-11	ELECT CHIP	4.7MF	20%	35V
C687	1-135-170-21	TANTAL. CHIP	6.8MF	20%	4V
C688	1-126-603-11	ELECT CHIP	4.7MF	20%	35V
C690	1-135-181-21	TANTAL. CHIP	4.7MF	20%	6.3V
C691	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C692	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C695	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C696	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C697	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C698	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C699	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C700	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C701	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C702	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C703	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C704	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C705	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C706	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C707	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C708	1-135-091-00	TANTAL. CHIP	1MF	20%	16V
C709	1-162-964-11	CERAMIC CHIP	0.001MF	10%	50V
C710	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C711	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C712	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C713	1-162-942-11	CERAMIC CHIP	12PF	5%	50V
C719	1-162-955-11	CERAMIC CHIP	150PF	5%	50V
C720	1-162-942-11	CERAMIC CHIP	12PF	5%	50V
C722	1-135-158-21	TANTAL. CHIP	15MF	20%	4V

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description	Remark
C724	1-163-092-00	CERAMIC CHIP 9PF	0.25PF50V
C725	1-135-091-00	TANTAL. CHIP 1MF	20% 16V
C726	1-162-943-11	CERAMIC CHIP 15PF	5% 50V
C728	1-163-117-00	CERAMIC CHIP 100PF	5% 50V
C729	1-163-035-00	CERAMIC CHIP 0.047MF	50V
C730	1-164-232-11	CERAMIC CHIP 0.01MF	50V
C732	1-163-100-00	CERAMIC CHIP 20PF	5% 50V
C733	1-162-974-11	CERAMIC CHIP 0.01MF	50V
C734	1-162-974-11	CERAMIC CHIP 0.01MF	50V
C737	1-164-004-11	CERAMIC CHIP 0.1MF	10% 25V
C738	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V
C739	1-162-959-11	CERAMIC CHIP 330PF	5% 50V
C740	1-162-959-11	CERAMIC CHIP 330PF	5% 50V
C741	1-162-974-11	CERAMIC CHIP 0.01MF	50V
C742	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C743	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V

VARIABLE CAPACITOR

CV601	1-141-331-11	CAP, VAR, TRIMMER (CHIP)	
CV602	1-141-331-11	CAP, VAR, TRIMMER (CHIP)	

DIODE

D602	8-719-800-76	DIODE 1SS226	
D603	8-719-100-05	DIODE MA152WK	
D604	8-719-800-76	DIODE 1SS226	
D605	8-719-800-76	DIODE 1SS226	
D609	8-719-941-86	DIODE DAN202U	
D612	8-719-800-76	DIODE 1SS226	
D614	8-719-800-76	DIODE 1SS226	
D616	8-719-404-40	DIODE MA121	
D619	8-719-941-86	DIODE DAN202U	
D620	8-719-941-86	DIODE DAN202U	
D621	8-719-941-86	DIODE DAN202U	
D622	8-719-941-86	DIODE DAN202U	
D623	8-719-800-76	DIODE 1SS226	
D624	8-719-941-09	DIODE DAP202U	

DELAY LINE

DL601	1-415-518-31	DELAY LINE, DUAL 1H-2H	
DL603	1-415-696-11	DL, LC	
DL604	1-415-646-11	DL, LC	

FILTER

FL602	1-236-538-11	BPF	
FL603	1-409-394-11	TRAP, CHROMA EMPHASIS	
FL604	1-236-537-11	BPF	
FL605	1-235-632-11	BPF	
FL606	1-235-633-11	BPF	

IC

IC601	8-752-202-10	IC CX22021	
IC602	8-752-003-22	IC CX20032	
IC603	8-759-202-67	IC CX20117	
IC604	8-759-305-47	IC CX23054	
IC605	8-759-710-09	IC NJM2233AM	
IC606	8-759-710-07	IC NJM2234M	
IC609	8-759-925-60	IC BA401	

VARIABLE COIL

L601	1-410-657-21	INDUCTOR CHIP 180UH	
L602	1-410-385-11	INDUCTOR CHIP 22UH	
L603	1-410-393-11	INDUCTOR CHIP 100UH	
L604	1-410-656-11	INDUCTOR CHIP 150UH	
L605	1-410-655-31	INDUCTOR CHIP 120UH	
L606	1-410-393-11	INDUCTOR CHIP 100UH	

Ref.No	Part No.	Description	Remark
L607	1-412-058-11	INDUCTOR CHIP 10UH	
L608	1-410-385-11	INDUCTOR CHIP 22UH	
L609	1-410-391-11	INDUCTOR CHIP 68UH	
L610	1-410-369-11	INDUCTOR CHIP 1UH	
L611	1-410-369-11	INDUCTOR CHIP 1UH	
L612	1-412-058-11	INDUCTOR CHIP 10UH	
L613	1-412-058-11	INDUCTOR CHIP 10UH	
L614	1-408-777-00	INDUCTOR CHIP 10UH	
L616	1-410-388-21	INDUCTOR CHIP 39UH	
L617	1-410-386-11	INDUCTOR CHIP 27UH	
L620	1-412-058-11	INDUCTOR CHIP 10UH	
L621	1-410-393-11	INDUCTOR CHIP 100UH	
L623	1-408-776-00	INDUCTOR CHIP 8.2UH	
L624	1-410-387-11	INDUCTOR CHIP 33UH	
L626	1-410-385-11	INDUCTOR CHIP 22UH	
L627	1-410-393-11	INDUCTOR CHIP 100UH	

COIL

LV601	1-404-594-11	COIL, VARIABLE	

TRANSISTOR

Q601	8-729-216-22	TRANSISTOR 2SA1162	
Q602	8-729-905-23	TRANSISTOR 2SA1576-R	
Q604	8-729-905-35	TRANSISTOR 2SC4081-R	
Q605	8-729-905-18	TRANSISTOR DTC144EU	
Q606	8-729-905-35	TRANSISTOR 2SC4081	
Q608	8-729-904-07	TRANSISTOR FMG2	
Q609	8-729-901-01	TRANSISTOR DTC144EK	
Q610	8-729-904-07	TRANSISTOR FMG2	
Q612	8-729-901-01	TRANSISTOR DTC144EK	
Q613	8-729-162-44	TRANSISTOR 2SB624-BV4	
Q614	8-729-905-12	TRANSISTOR DTA144EU	
Q615	8-729-905-45	TRANSISTOR DTA143EU	
Q616	8-729-905-23	TRANSISTOR 2SA1576-R	
Q617	8-729-905-35	TRANSISTOR 2SC4081-R	
Q618	8-729-905-35	TRANSISTOR 2SC4081-R	
Q621	8-729-100-66	TRANSISTOR 2SC1623	
Q622	8-729-903-10	TRANSISTOR FMW1	
Q624	8-729-901-06	TRANSISTOR DTA144EK	
Q625	8-729-904-20	TRANSISTOR FMA2	
Q627	8-729-904-07	TRANSISTOR FMG2	
Q628	8-729-100-66	TRANSISTOR 2SC1623	
Q630	8-729-901-01	TRANSISTOR DTC144EK	
Q631	8-729-100-66	TRANSISTOR 2SC1623	
Q632	8-729-100-66	TRANSISTOR 2SC1623	
Q633	8-729-901-06	TRANSISTOR DTA144EK	
Q634	8-729-904-07	TRANSISTOR FMG2	
Q636	8-729-904-20	TRANSISTOR FMA2	
Q638	8-729-901-06	TRANSISTOR DTA144EK	
Q639	8-729-901-01	TRANSISTOR DTC144EK	
Q640	8-729-901-06	TRANSISTOR DTA144EK	
Q641	8-729-901-06	TRANSISTOR DTA144EK	
Q644	8-729-901-01	TRANSISTOR DTC144EK	
Q645	8-729-905-35	TRANSISTOR 2SC4081-R	
Q646	8-729-903-10	TRANSISTOR FMW1	
Q647	8-729-216-22	TRANSISTOR 2SA1162	
Q648	8-729-100-66	TRANSISTOR 2SC1623	
Q649	8-729-905-35	TRANSISTOR 2SC4081-R	
Q650	8-729-100-66	TRANSISTOR 2SC1623	
Q651	8-729-901-06	TRANSISTOR DTA144EK	
Q652	8-729-100-66	TRANSISTOR 2SC1623	
Q654	8-729-905-35	TRANSISTOR 2SC4081-R	
Q655	8-729-905-15	TRANSISTOR DTC144WU	
Q656	8-729-905-18	TRANSISTOR DTC144EU	
Q657	8-729-905-12	TRANSISTOR DTA144EU	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
Q661	8-729-905-12	TRANSISTOR DTA144EU			
Q662	8-729-905-23	TRANSISTOR 2SA1576-R			
Q663	8-729-904-07	TRANSISTOR FMG2			
Q664	8-729-904-20	TRANSISTOR FMA2			

RESISTOR

Ref.No	Part No.	Description			Remark
R101	1-216-835-11	METAL GLAZE	15K	5%	1/16W
R102	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R104	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R105	1-216-047-00	METAL GLAZE	820	5%	1/10W
R106	1-216-864-11	METAL GLAZE	0	5%	1/16W
R107	1-216-817-11	METAL GLAZE	470	5%	1/16W
R109	1-216-864-11	METAL GLAZE	0	5%	1/16W
R112	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W
R113	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R114	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R115	1-216-839-11	METAL GLAZE	33K	5%	1/16W
R116	1-216-043-00	METAL GLAZE	560	5%	1/10W
R117	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R118	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R122	1-216-835-11	METAL GLAZE	15K	5%	1/16W
R123	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R124	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W
R125	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R126	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R127	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R128	1-216-819-11	METAL GLAZE	680	5%	1/16W
R129	1-216-812-11	METAL GLAZE	180	5%	1/16W
R130	1-216-812-11	METAL GLAZE	180	5%	1/16W
R131	1-216-818-11	METAL GLAZE	560	5%	1/16W
R132	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R134	1-216-295-00	METAL GLAZE	0	5%	1/10W
R143	1-216-864-11	METAL GLAZE	0	5%	1/16W
R144	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R146	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W
R147	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W
R148	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W
R149	1-216-849-11	METAL GLAZE	220K	5%	1/16W
R150	1-216-849-11	METAL GLAZE	220K	5%	1/16W
R152	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R601	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R602	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R603	1-216-818-11	METAL GLAZE	560	5%	1/16W
R604	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R605	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R606	1-216-809-11	METAL GLAZE	100	5%	1/16W
R607	1-216-835-11	METAL GLAZE	15K	5%	1/16W
R608	1-216-835-11	METAL GLAZE	15K	5%	1/16W
R609	1-216-818-11	METAL GLAZE	560	5%	1/16W
R610	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R611	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R613	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R614	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W
R615	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W
R618	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R619	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R620	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R621	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W
R622	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R623	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R624	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R625	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R626	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W
R627	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W
R628	1-216-835-11	METAL GLAZE	15K	5%	1/16W
R629	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R630	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R632	1-216-848-11	METAL GLAZE	180K	5%	1/16W
R636	1-216-295-00	METAL GLAZE	0	5%	1/10W
R637	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R638	1-216-816-11	METAL GLAZE	390	5%	1/16W
R639	1-216-857-11	METAL GLAZE	1M	5%	1/16W
R640	1-216-854-11	METAL GLAZE	560K	5%	1/16W
R641	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R644	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R647	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R649	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R650	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R651	1-216-817-11	METAL GLAZE	470	5%	1/16W
R652	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R653	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R654	1-216-818-11	METAL GLAZE	560	5%	1/16W
R655	1-216-843-11	METAL GLAZE	68K	5%	1/16W
R656	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R657	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W
R658	1-216-844-11	METAL GLAZE	82K	5%	1/16W
R659	1-216-846-11	METAL GLAZE	120K	5%	1/16W
R660	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R661	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R662	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W
R663	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R664	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R665	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W
R666	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R667	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R668	1-216-864-11	METAL GLAZE	0	5%	1/16W
R669	1-216-864-11	METAL GLAZE	0	5%	1/16W
R672	1-216-864-11	METAL GLAZE	0	5%	1/16W
R673	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R674	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W
R675	1-216-818-11	METAL GLAZE	560	5%	1/16W
R676	1-216-819-11	METAL GLAZE	680	5%	1/16W
R677	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W
R678	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W
R679	1-216-824-11	METAL GLAZE	1.8K	5%	1/16W
R680	1-216-840-11	METAL GLAZE	39K	5%	1/16W
R681	1-216-840-11	METAL GLAZE	39K	5%	1/16W
R682	1-216-824-11	METAL GLAZE	1.8K	5%	1/16W
R683	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W
R684	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W
R685	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W
R686	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R688	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R691	1-216-809-11	METAL GLAZE	100	5%	1/16W
R692	1-216-801-11	METAL GLAZE	22	5%	1/16W
R693	1-216-810-11	METAL GLAZE	120	5%	1/16W
R694	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R695	1-216-834-11	METAL GLAZE	12K	5%	1/16W
R696	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R697	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R698	1-216-814-11	METAL GLAZE	270	5%	1/16W
R699	1-216-810-11	METAL GLAZE	120	5%	1/16W
R700	1-216-816-11	METAL GLAZE	390	5%	1/16W
R702	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R705	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W
R706	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R707	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R708	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R709	1-216-834-11	METAL GLAZE	12K	5%	1/16W
R710	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R711	1-216-809-11	METAL GLAZE	100	5%	1/16W

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
R712	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R713	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W
R714	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R715	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W
R716	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W
R717	1-216-033-00	METAL GLAZE	220	5%	1/10W
R724	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R725	1-216-819-11	METAL GLAZE	680	5%	1/16W
R726	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R727	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R728	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R729	1-216-819-11	METAL GLAZE	680	5%	1/16W
R730	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R731	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R732	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R733	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R734	1-216-864-11	METAL GLAZE	0	5%	1/16W
R735	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R736	1-216-864-11	METAL GLAZE	0	5%	1/16W
R737	1-216-814-11	METAL GLAZE	270	5%	1/16W
R739	1-216-819-11	METAL GLAZE	680	5%	1/16W
R740	1-216-839-11	METAL GLAZE	33K	5%	1/16W
R741	1-216-813-11	METAL GLAZE	220	5%	1/16W
R742	1-216-835-11	METAL GLAZE	15K	5%	1/16W
R743	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W
R744	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R745	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W
R746	1-216-838-11	METAL GLAZE	27K	5%	1/16W
R747	1-216-817-11	METAL GLAZE	470	5%	1/16W
R748	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R749	1-216-815-11	METAL GLAZE	330	5%	1/16W
R750	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R751	1-216-039-00	METAL GLAZE	390	5%	1/10W
R752	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R753	1-216-041-00	METAL GLAZE	470	5%	1/10W
R754	1-216-031-00	METAL GLAZE	180	5%	1/10W
R755	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R756	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W
R757	1-216-843-11	METAL GLAZE	68K	5%	1/16W
R758	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W
R759	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W
R760	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R761	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R762	1-216-820-11	METAL GLAZE	820	5%	1/16W
R763	1-216-035-00	METAL GLAZE	270	5%	1/10W
R764	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W
R765	1-216-820-11	METAL GLAZE	820	5%	1/16W
R771	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R772	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R774	1-216-864-11	METAL GLAZE	0	5%	1/16W
R776	1-216-864-11	METAL GLAZE	0	5%	1/16W
R779	1-216-864-11	METAL GLAZE	0	5%	1/16W
R787	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W
R789	1-216-819-11	METAL GLAZE	680	5%	1/16W
R790	1-216-819-11	METAL GLAZE	680	5%	1/16W
R791	1-216-047-00	METAL GLAZE	820	5%	1/10W
R795	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W
R796	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W
R797	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W
R798	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R799	1-216-837-11	METAL GLAZE	22K	5%	1/16W

VARIABLE RESISTOR

Ref.No	Part No.	Description
RV601	1-230-871-11	RES, ADJ, METAL GLAZE 22K
RV602	1-230-871-11	RES, ADJ, METAL GLAZE 22K
RV603	1-230-873-11	RES, ADJ, METAL GLAZE 47K
RV604	1-230-875-21	RES, ADJ, METAL GLAZE 220K

CRYSTAL

Ref.No	Part No.	Description
X601	1-567-504-81	OSCILLATOR, CRYSTAL (4.43MHz)

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*A-7061-755-A MR-20 BOARD, COMPLETE

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(Ref, No.1000series)

A-7068-155-A HR-3P BOARD, COMPLETE (HIC)

CAPACITOR

Ref.No	Part No.	Description			Remark
C801	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C802	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C803	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C804	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C805	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C806	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C807	1-135-161-21	TANTAL. CHIP	22MF	20%	6.3V
C808	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C809	1-135-157-21	TANTAL. CHIP	10MF	20%	4V
C810	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C811	1-135-161-21	TANTAL. CHIP	22MF	20%	6.3V
C812	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C813	1-162-940-11	CERAMIC CHIP	9PF	0.5PF	50V
C814	1-162-940-11	CERAMIC CHIP	9PF	0.5PF	50V
C816	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C817	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C818	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C819	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C820	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C821	1-135-155-21	TANTAL. CHIP	4.7MF	20%	16V
C822	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C823	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C824	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C825	1-162-965-11	CERAMIC CHIP	0.0015MF	10%	50V
C827	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C828	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C829	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C830	1-162-948-11	CERAMIC CHIP	39PF	5%	50V
C831	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C832	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C833	1-126-601-11	ELECT CHIP	2.2MF	20%	50V
C834	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C835	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C838	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C839	1-162-938-11	CERAMIC CHIP	7PF	0.5PF	50V
C840	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V
C841	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C845	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C846	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C847	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C848	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C849	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C850	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C851	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C853	1-162-938-11	CERAMIC CHIP	7PF	0.5PF	50V
C854	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C855	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C856	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C857	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C858	1-163-035-00	CERAMIC CHIP	0.047MF		50V

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
C859	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C860	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C861	1-162-937-11	CERAMIC CHIP	6PF	0.5PF	50V
C862	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C863	1-126-603-11	ELECT CHIP	4.7MF	20%	35V
C864	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C865	1-126-603-11	ELECT CHIP	4.7MF	20%	35V
C866	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C870	1-162-955-11	CERAMIC CHIP	150PF	5%	50V
C871	1-162-968-11	CERAMIC CHIP	0.0047MF	10%	50V
C872	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C873	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C876	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C880	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C881	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C882	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C883	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C884	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C885	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C886	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C887	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C890	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V
C891	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V
C892	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C893	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C894	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C896	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C897	1-164-227-11	CERAMIC CHIP	0.022MF	10%	25V
C898	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C899	1-162-913-11	CERAMIC CHIP	8PF	0.5PF	50V
C900	1-162-948-11	CERAMIC CHIP	39PF	5%	50V
C902	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C905	1-135-157-21	TANTAL. CHIP	10MF	20%	4V
C906	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C907	1-162-913-11	CERAMIC CHIP	8PF	0.5PF	50V
C908	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C951	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C952	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C953	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C954	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C955	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C956	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C957	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C958	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C959	1-135-180-21	TANTAL. CHIP	3.3MF	20%	4V
C960	1-162-946-11	CERAMIC CHIP	27PF	5%	50V
C961	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C962	1-135-180-21	TANTAL. CHIP	3.3MF	20%	4V

CONNECTOR

Ref.No	Part No.	Description
CN801	1-566-516-11	CONNECTOR, FPC (ZIF) 16P
CN802	1-506-485-11	PIN, CONNECTOR 6P
CN804	*1-566-766-11	PIN, CONNECTOR (PC BOARD) 11P
CN805	*1-566-761-11	PIN, CONNECTOR (PC BOARD) 6P

DIODE

Ref.No	Part No.	Description
D801	8-719-123-85	DIODE 1SS304
D802	8-719-123-85	DIODE 1SS304
D804	8-719-800-76	DIODE 1SS226
D805	8-719-123-85	DIODE 1SS304
D806	8-719-123-85	DIODE 1SS304
D807	8-719-100-05	DIODE MA152WK
D808	8-719-123-85	DIODE 1SS304
D810	8-719-123-85	DIODE 1SS304
D811	8-719-800-76	DIODE 1SS226
D812	8-719-123-85	DIODE 1SS304
D813	8-719-123-85	DIODE 1SS304
D814	8-719-123-85	DIODE 1SS304
D951	8-719-800-76	DIODE 1SS226

IC

Ref.No	Part No.	Description
IC801	8-759-209-17	IC TA8607F
IC802	8-759-925-60	IC BA401

COIL

Ref.No	Part No.	Description	
L801	1-410-732-21	INDUCTOR CHIP	0.18UH
L802	1-410-381-11	INDUCTOR CHIP	10UH
L803	1-410-382-31	INDUCTOR CHIP	12UH
L804	1-410-384-11	INDUCTOR CHIP	18UH
L805	1-410-384-11	INDUCTOR CHIP	18UH
L806	1-410-381-11	INDUCTOR CHIP	10UH
L807	1-410-381-11	INDUCTOR CHIP	10UH
L808	1-408-795-21	INDUCTOR CHIP	330UH
L809	1-410-167-31	INDUCTOR CHIP	820UH
L810	1-410-657-21	INDUCTOR CHIP	180UH
L811	1-410-379-21	INDUCTOR CHIP	6.8UH
L812	1-410-374-11	INDUCTOR CHIP	2.7UH
L813	1-410-380-31	INDUCTOR CHIP	8.2UH
L814	1-410-379-21	INDUCTOR CHIP	6.8UH
L815	1-410-384-11	INDUCTOR CHIP	18UH
L816	1-408-797-11	INDUCTOR CHIP	470UH
L817	1-408-797-11	INDUCTOR CHIP	470UH
L818	1-410-384-11	INDUCTOR CHIP	18UH
L819	1-408-793-21	INDUCTOR CHIP	220UH
L820	1-410-381-11	INDUCTOR CHIP	10UH
L821	1-410-385-11	INDUCTOR CHIP	22UH
L822	1-410-383-31	INDUCTOR CHIP	15UH
L823	1-410-387-11	INDUCTOR CHIP	33UH
L825	1-410-381-11	INDUCTOR CHIP	10UH
L951	1-410-381-11	INDUCTOR CHIP	10UH
L952	1-410-387-11	INDUCTOR CHIP	33UH
L953	1-410-381-11	INDUCTOR CHIP	10UH
L954	1-410-381-11	INDUCTOR CHIP	10UH

TRANSISTOR

Ref.No	Part No.	Description
Q801	8-729-901-02	TRANSISTOR DTC124XK
Q802	8-729-105-68	TRANSISTOR 2SC3356-K
Q803	8-729-102-07	TRANSISTOR 2SC2223-F13
Q804	8-729-117-32	TRANSISTOR 2SC4177
Q805	8-729-102-07	TRANSISTOR 2SC2223-F13
Q806	8-729-102-07	TRANSISTOR 2SC2223-F13
Q807	8-729-403-35	TRANSISTOR UN5113
Q808	8-729-216-22	TRANSISTOR 2SA1162
Q809	8-729-119-76	TRANSISTOR 2SA1175-HFE
Q810	8-729-216-22	TRANSISTOR 2SA1162
Q811	8-729-117-32	TRANSISTOR 2SC4177
Q812	8-729-117-32	TRANSISTOR 2SC4177
Q813	8-729-403-07	TRANSISTOR XN1213
Q814	8-729-905-45	TRANSISTOR DTA143EU
Q815	8-729-905-09	TRANSISTOR DTA144WU
Q817	8-729-117-32	TRANSISTOR 2SC4177
Q819	8-729-117-32	TRANSISTOR 2SC4177
Q820	8-729-421-23	TRANSISTOR XN1216
Q821	8-729-117-32	TRANSISTOR 2SC4177
Q822	8-729-117-32	TRANSISTOR 2SC4177
Q823	8-729-162-44	TRANSISTOR 2SB624-BV4
Q824	8-729-905-18	TRANSISTOR DTC144EU
Q825	8-729-403-07	TRANSISTOR XN1213
Q826	8-729-403-35	TRANSISTOR UN5113
Q827	8-729-905-18	TRANSISTOR DTC144EU
Q828	8-729-907-00	TRANSISTOR DTC114EU

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description			Remark
Q829	8-729-905-18	TRANSISTOR DTC144EU			
Q830	8-729-216-22	TRANSISTOR 2SA1162			
Q831	8-729-102-07	TRANSISTOR 2SC2223-F13			
Q832	8-729-102-07	TRANSISTOR 2SC2223-F13			
Q833	8-729-202-38	TRANSISTOR 2SC3326N			
Q836	8-729-100-66	TRANSISTOR 2SC1623			
Q837	8-729-117-32	TRANSISTOR 2SC4177			
Q838	8-729-117-32	TRANSISTOR 2SC4177			
Q839	8-729-117-32	TRANSISTOR 2SC4177			
Q840	8-729-905-XX	TRANSISTOR DTC114TU			
Q841	8-729-117-32	TRANSISTOR 2SC4177			
Q842	8-729-117-32	TRANSISTOR 2SC4177			
Q843	8-729-117-32	TRANSISTOR 2SC4177			
Q844	8-729-905-23	TRANSISTOR 2SA1576-R			
Q847	8-729-117-32	TRANSISTOR 2SC4177			
Q848	8-729-905-18	TRANSISTOR DTC144EU			
Q849	8-729-905-18	TRANSISTOR DTC144EU			
Q850	8-729-117-32	TRANSISTOR 2SC4177			
Q851	8-729-905-18	TRANSISTOR DTC144EU			
Q852	8-729-216-22	TRANSISTOR 2SA1162			
Q950	8-729-905-35	TRANSISTOR 2SC4081-R			
Q951	8-729-402-81	TRANSISTOR XN4501			
Q952	8-729-117-32	TRANSISTOR 2SC4177			
Q953	8-729-905-23	TRANSISTOR 2SA1576-R			
Q954	8-729-905-35	TRANSISTOR 2SC4081-R			
Q955	8-729-403-42	TRANSISTOR XN1401			
Q956	8-729-117-32	TRANSISTOR 2SC4177			
Q957	8-729-905-23	TRANSISTOR 2SA1576-R			
Q958	8-729-117-32	TRANSISTOR 2SC4177			
Q959	8-729-905-18	TRANSISTOR DTC144EU			

RESISTOR

Ref.No	Part No.	Description			Remark
R801	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W
R802	1-216-817-11	METAL GLAZE	470	5%	1/16W
R803	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W
R804	1-216-811-11	METAL GLAZE	150	5%	1/16W
R805	1-216-809-11	METAL GLAZE	100	5%	1/16W
R806	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R807	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W
R808	1-216-817-11	METAL GLAZE	470	5%	1/16W
R809	1-216-824-11	METAL GLAZE	1.8K	5%	1/16W
R810	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W
R811	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W
R812	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W
R813	1-216-809-11	METAL GLAZE	100	5%	1/16W
R814	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W
R817	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R818	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R819	1-216-807-11	METAL GLAZE	68	5%	1/16W
R820	1-216-804-11	METAL GLAZE	39	5%	1/16W
R821	1-216-818-11	METAL GLAZE	560	5%	1/16W
R822	1-216-814-11	METAL GLAZE	270	5%	1/16W
R823	1-216-813-11	METAL GLAZE	220	5%	1/16W
R824	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R825	1-216-839-11	METAL GLAZE	33K	5%	1/16W
R826	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R827	1-216-811-11	METAL GLAZE	150	5%	1/16W
R828	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R829	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R830	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R831	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R832	1-216-824-11	METAL GLAZE	1.8K	5%	1/16W
R834	1-216-818-11	METAL GLAZE	560	5%	1/16W
R835	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R836	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R837	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W

Ref.No	Part No.	Description			Remark
R838	1-216-817-11	METAL GLAZE	470	5%	1/16W
R839	1-216-817-11	METAL GLAZE	470	5%	1/16W
R840	1-216-814-11	METAL GLAZE	270	5%	1/16W
R841	1-216-814-11	METAL GLAZE	270	5%	1/16W
R842	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R843	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R844	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R846	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R847	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R848	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R849	1-216-817-11	METAL GLAZE	470	5%	1/16W
R850	1-216-810-11	METAL GLAZE	120	5%	1/16W
R852	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W
R855	1-216-815-11	METAL GLAZE	330	5%	1/16W
R856	1-216-820-11	METAL GLAZE	820	5%	1/16W
R857	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R858	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R859	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R861	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W
R862	1-216-838-11	METAL GLAZE	27K	5%	1/16W
R865	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R866	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W
R867	1-216-818-11	METAL GLAZE	560	5%	1/16W
R868	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R869	1-216-824-11	METAL GLAZE	1.8K	5%	1/16W
R870	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R874	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R875	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R876	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R877	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R878	1-216-812-11	METAL GLAZE	180	5%	1/16W
R879	1-216-812-11	METAL GLAZE	180	5%	1/16W
R882	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R883	1-216-844-11	METAL GLAZE	82K	5%	1/16W
R884	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W
R885	1-216-839-11	METAL GLAZE	33K	5%	1/16W
R886	1-216-835-11	METAL GLAZE	15K	5%	1/16W
R887	1-216-818-11	METAL GLAZE	560	5%	1/16W
R888	1-216-816-11	METAL GLAZE	390	5%	1/16W
R889	1-216-817-11	METAL GLAZE	470	5%	1/16W
R890	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R891	1-216-818-11	METAL GLAZE	560	5%	1/16W
R895	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R896	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R899	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R901	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R902	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R907	1-216-817-11	METAL GLAZE	470	5%	1/16W
R908	1-216-836-11	METAL GLAZE	18K	5%	1/16W
R909	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R910	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W
R911	1-216-809-11	METAL GLAZE	100	5%	1/16W
R912	1-216-296-00	METAL GLAZE	0	5%	1/8W
R913	1-216-809-11	METAL GLAZE	100	5%	1/16W
R914	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W
R915	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R916	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R917	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R920	1-216-836-11	METAL GLAZE	18K	5%	1/16W
R921	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R922	1-216-817-11	METAL GLAZE	470	5%	1/16W
R923	1-216-817-11	METAL GLAZE	470	5%	1/16W
R924	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R925	1-216-817-11	METAL GLAZE	470	5%	1/16W
R926	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
R927	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W
R928	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W
R929	1-216-817-11	METAL GLAZE	470	5%	1/16W
R930	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W
R931	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W
R932	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R934	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R935	1-216-817-11	METAL GLAZE	470	5%	1/16W
R936	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R937	1-216-835-11	METAL GLAZE	15K	5%	1/16W
R938	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W
R939	1-216-835-11	METAL GLAZE	15K	5%	1/16W
R941	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W
R944	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W
R945	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R946	1-216-836-11	METAL GLAZE	18K	5%	1/16W
R947	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R951	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R952	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R953	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W
R954	1-216-811-11	METAL GLAZE	150	5%	1/16W
R955	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W
R956	1-216-820-11	METAL GLAZE	820	5%	1/16W
R957	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R958	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R959	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W
R960	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W
R961	1-216-839-11	METAL GLAZE	33K	5%	1/16W
R962	1-216-836-11	METAL GLAZE	18K	5%	1/16W
R963	1-216-839-11	METAL GLAZE	33K	5%	1/16W
R964	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W
R965	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R966	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R967	1-216-818-11	METAL GLAZE	560	5%	1/16W
R968	1-216-834-11	METAL GLAZE	12K	5%	1/16W
R969	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R970	1-216-839-11	METAL GLAZE	33K	5%	1/16W
R971	1-216-841-11	METAL GLAZE	47K	5%	1/16W

VARIABLE RESISTOR

RV801	1-230-869-11	RES, ADJ, METAL GLAZE 4.7K
RV802	1-230-869-11	RES, ADJ, METAL GLAZE 4.7K
RV803	1-230-869-11	RES, ADJ, METAL GLAZE 4.7K
RV805	1-230-868-11	RES, ADJ, METAL GLAZE 2.2K
RV806	1-230-867-11	RES, ADJ, METAL GLAZE 1K

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*A-7061-756-A AT-7P BOARD, COMPLETE (AEP/UK)

A-7061-976-A AT-7P BOARD, COMPLETE (AUS/E)

(Ref. No.3000serise)

CAPACITOR

C310	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C311	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C312	1-135-157-21	TANTAL. CHIP	10MF	20%	6.3V
C313	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C314	1-135-157-21	TANTAL. CHIP	10MF	20%	6.3V
C315	1-162-638-11	CERAMIC CHIP	1MF		16V
C316	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C317	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C318	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C319	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V

Ref.No	Part No.	Description			Remark
C320	1-163-125-00	CERAMIC CHIP	220PF	10%	50V
C321	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C322	1-163-015-00	CERAMIC CHIP	0.0033MF	10%	50V
C323	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C324	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C325	1-163-077-00	CERAMIC CHIP	0.1MF	10%	25V
C326	1-163-075-00	CERAMIC CHIP	0.047MF	10%	25V
C327	1-163-075-00	CERAMIC CHIP	0.047MF	10%	25V
C328	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C329	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C330	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C331	1-163-145-00	CERAMIC CHIP	0.0015MF	5%	50V
C332	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C333	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C334	1-162-638-11	CERAMIC CHIP	1MF		16V
C335	1-162-638-11	CERAMIC CHIP	1MF		16V
C336	1-163-059-00	CERAMIC CHIP	0.01MF	10%	50V
C340	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C341	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C342	1-163-125-00	CERAMIC CHIP	220PF	10%	50V
C343	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C344	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C350	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V
C351	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C352	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C353	1-126-193-11	ELECT CHIP	1MF	20%	50V
C354	1-135-147-21	TANTAL. CHIP (AEP /UK)	1MF	20%	20V
C355	1-126-207-11	ELECT CHIP	33MF	20%	4V
C356	1-124-584-00	ELECT	100MF	20%	10V
C358	1-126-206-11	ELECT CHIP	100MF	20%	6.3V
C359	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C360	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C361	1-124-779-00	ELECT CHIP	10MF	20%	16V
C362	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C363	1-124-779-00	ELECT CHIP	10MF	20%	16V
C364	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C365	1-163-011-11	CERAMIC CHIP	0.0015MF	10%	50V
C366	1-126-206-11	ELECT CHIP	100MF	20%	6.3V
C367	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C368	1-126-206-11	ELECT CHIP	100MF	20%	6.3V
C369	1-126-601-11	ELECT CHIP	2.2MF	20%	50V
C370	1-126-603-11	ELECT CHIP	4.7MF	20%	35V
C371	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C372	1-126-206-11	ELECT CHIP	100MF	20%	6.3V
C373	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C374	1-124-779-00	ELECT CHIP	10MF	20%	16V

CONNECTOR

CN310	1-568-113-11	CONNECTOR, BOARD TO BOARD 22P
CN311	1-566-760-11	PIN, CONNECTOR (PC BOARD) 5P

FILTER

FL350	1-236-145-11	FILTER, BAND PASS

IC

IC310	8-759-209-53	IC CXA1204Q
IC350	8-741-150-51	IC SBX1505-21

COIL

L310	1-412-058-11	INDUCTOR CHIP	10UH
L311	1-408-795-21	INDUCTOR CHIP	330UH
L312	1-412-058-11	INDUCTOR CHIP	10UH
L350	1-410-389-11	INDUCTOR CHIP	47UH
L351	1-410-192-51	INDUCTOR CHIP	1UH

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
L352	1-410-192-51	INDUCTOR CHIP 1UH	
L353	1-410-192-51	INDUCTOR CHIP 1UH	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q310	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q311	8-729-117-32	TRANSISTOR 2SC4177	
Q312	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q313	8-729-117-32	TRANSISTOR 2SC4177	
Q314	8-729-117-32	TRANSISTOR 2SC4177	
Q315	8-729-403-35	TRANSISTOR UN5113	
Q350	8-729-420-20	TRANSISTOR XN4312	
Q351	8-729-907-26	TRANSISTOR IMX1	
Q352	8-729-117-32	TRANSISTOR 2SC4177	
Q353	8-729-117-32	TRANSISTOR 2SC4177	
Q354	8-729-117-32	TRANSISTOR 2SC4177	
Q355	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q356	8-729-117-32	TRANSISTOR 2SC4177	
Q357	8-729-403-35	TRANSISTOR UN5113	
Q358	8-729-402-42	TRANSISTOR UN5213	
Q359	8-729-403-35	TRANSISTOR UN5113	
Q360	8-729-117-32	TRANSISTOR 2SC4177	

RESISTOR

Ref.No	Part No.	Description	Remark
R310	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R311	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R312	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R313	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R314	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R315	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R316	1-216-035-00	METAL GLAZE 270 5% 1/10W	
R317	1-216-031-00	METAL GLAZE 180 5% 1/10W	
R318	1-216-748-11	METAL GLAZE 39K 5% 1/10W	
R322	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R323	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R324	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R325	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R326	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R327	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R328	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R329	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R330	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R331	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R332	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R333	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R335	1-216-117-00	METAL GLAZE 680K 5% 1/10W	
R336	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R339	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R340	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R341	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R342	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R343	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R350	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R351	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R352	1-216-095-00	METAL GLAZE 82K 5% 1/10W	
R353	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R354	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R355	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R356	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R357	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R358	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R360	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R361	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R362	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R363	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R364	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R365	1-216-009-00	METAL GLAZE 22 5% 1/10W	
R366	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R367	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R368	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R369	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R370	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R371	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R372	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R373	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R374	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R375	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R376	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R377	1-216-089-00	METAL GLAZE 47K 5% 1/10W (AEP/UK)	
R378	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W (AEP/UK)	
R380	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R381	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV310	1-230-869-11	RES, ADJ, METAL GRAZE 4.7K	
RV350	1-230-870-11	RES, ADJ, METAL GRAZE 10K	

CRYSTAL

Ref.No	Part No.	Description	Remark
X310	1-567-827-11	VIBRATOR, CRYSTAL (5.85938MHz)	

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*A-7061-757-A VC-54P BOARD, COMPLETE

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(Ref. No.2000series)

Ref.No	Part No.	Description	Remark
	A-7068-143-A	DT-73P BOARD, COMPLETE (HIC)	
	1-574-480-11	CABLE, FLAT (1.0MM PITCH) 34P	
	1-574-856-11	CABLE, FLAT (1.0MM PITCH) 20P	
	1-574-878-11	WIRE, FLAT TYPE PVC (16 CORE)	

CAPACITOR

Ref.No	Part No.	Description	Remark
C221	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C222	1-124-778-00	ELECT CHIP 22MF 20% 6.3V	
C223	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C224	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C225	1-126-204-11	ELECT CHIP 47MF 20% 16V	
C226	1-124-778-00	ELECT CHIP 22MF 20% 6.3V	
C227	1-126-204-11	ELECT CHIP 47MF 20% 16V	
C228	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C229	1-135-092-21	TANTAL. CHIP 3.3MF 20% 16V	
C230	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C232	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C234	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C235	1-126-602-11	ELECT CHIP 3.3MF 20% 50V	
C236	1-163-036-00	CERAMIC CHIP 0.068MF 50V	
C237	1-126-400-11	ELECT CHIP 22MF 20% 35V	
C238	1-135-089-21	TANTAL. CHIP 6.8MF 20% 20V	
C239	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C241	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C242	1-126-205-11	ELECT CHIP 47MF 20% 6.3V	
C243	1-135-145-11	TANTAL. CHIP 0.47MF 20% 25V	
C244	1-162-974-11	CERAMIC CHIP 0.01MF 50V	
C245	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C246	1-126-204-11	ELECT CHIP 47MF 20% 16V	
C258	1-163-036-00	CERAMIC CHIP 0.068MF 50V	
C261	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C262	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C263	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
C264	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C265	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C266	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C267	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C268	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C269	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	
C272	1-135-156-21	TANTAL. CHIP 6.8MF 20% 10V	
C273	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C274	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C275	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C276	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C277	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C279	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C283	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C285	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C287	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C288	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C290	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C291	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C292	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C293	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C294	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C295	1-135-091-00	TANTAL. CHIP 1MF 20% 16V	
C299	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	

CONNECTOR

Ref.No	Part No.	Description	Remark
CN221	1-568-112-11	CONNECTOR, BOARD TO BOARD 6P	
CN222	1-565-527-11	PIN, CONNECTOR (PC BOARD) 2P	

TRIMMER

Ref.No	Part No.	Description	Remark
CT261	1-141-331-11	CAP, VAR, TRIMMER (CHIP) 30P	

DIODE

Ref.No	Part No.	Description	Remark
D222	8-719-404-49	DIODE MA111	
D223	8-719-404-49	DIODE MA111	
D224	8-719-404-49	DIODE MA111	
D225	8-719-404-49	DIODE MA111	
D261	8-713-220-00	DIODE 1T32-2	

FILTER

Ref.No	Part No.	Description	Remark
FL221	1-236-368-11	LPF (YH)	
FL222	1-415-634-21	DL (LC)	

IC

Ref.No	Part No.	Description	Remark
IC261	8-752-326-08	IC CXD1159Q	

COIL

Ref.No	Part No.	Description	Remark
L221	1-412-031-11	INDUCTOR CHIP 47UH	
L222	1-412-034-21	INDUCTOR CHIP 330UH	
L223	1-410-192-51	INDUCTOR CHIP 1UH	
L224	1-412-032-11	INDUCTOR CHIP 100UH	
L225	1-410-192-51	INDUCTOR CHIP 1UH	
L226	1-410-192-51	INDUCTOR CHIP 1UH	
L227	1-410-192-51	INDUCTOR CHIP 1UH	
L228	1-410-192-51	INDUCTOR CHIP 1UH	
L229	1-410-192-51	INDUCTOR CHIP 1UH	
L230	1-412-029-11	INDUCTOR CHIP 10UH	
L262	1-410-204-31	INDUCTOR CHIP 10UH	
L263	1-410-192-51	INDUCTOR CHIP 1UH	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q221	8-729-809-88	TRANSISTOR 2SA1416-S	
Q222	8-729-810-01	TRANSISTOR 2SC3646-S	
Q223	8-729-402-84	TRANSISTOR XN4601	
Q224	8-729-905-23	TRANSISTOR 2SA1576-R	
Q225	8-729-402-84	TRANSISTOR XN4601	
Q226	8-729-402-84	TRANSISTOR XN4601	
Q227	8-729-402-84	TRANSISTOR XN4601	
Q228	8-729-402-84	TRANSISTOR XN4601	
Q229	8-729-402-84	TRANSISTOR XN4601	
Q230	8-729-905-23	TRANSISTOR 2SA1576-R	
Q260	8-729-905-35	TRANSISTOR 2SC4081-R	
Q261	8-729-905-35	TRANSISTOR 2SC4081-R	

RESISTOR

Ref.No	Part No.	Description	Remark
R189	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R195	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R199	1-216-820-11	METAL GLAZE 820 5% 1/16W	
R222	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R223	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R225	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R226	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R227	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R228	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R229	1-216-839-11	METAL GLAZE 33K 5% 1/16W	
R230	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R231	1-216-005-00	METAL GLAZE 15 5% 1/10W	
R232	1-216-005-00	METAL GLAZE 15 5% 1/10W	
R233	1-216-827-11	METAL GLAZE 3.3K 5% 1/16W	
R234	1-216-827-11	METAL GLAZE 3.3K 5% 1/16W	
R235	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R236	1-216-829-11	METAL GLAZE 4.7K 5% 1/16W	
R237	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R238	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R239	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R241	1-216-820-11	METAL GLAZE 820 5% 1/16W	
R242	1-216-839-11	METAL GLAZE 33K 5% 1/16W	
R243	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R245	1-216-822-11	METAL GLAZE 1.2K 5% 1/16W	
R246	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R247	1-216-673-11	METAL CHIP 8.2K 0.50% 1/10W	
R248	1-216-068-00	METAL GLAZE 6.2K 5% 1/10W	
R249	1-216-827-11	METAL GLAZE 3.3K 5% 1/16W	
R250	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R251	1-216-683-11	METAL CHIP 22K 0.50% 1/10W	
R252	1-216-689-11	METAL CHIP 39K 0.50% 1/10W	
R253	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R254	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R255	1-216-841-11	METAL GLAZE 47K 5% 1/16W	
R256	1-216-842-11	METAL GLAZE 56K 5% 1/16W	
R257	1-216-843-11	METAL GLAZE 68K 5% 1/16W	
R258	1-216-832-11	METAL GLAZE 8.2K 5% 1/16W	
R259	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R260	1-216-841-11	METAL GLAZE 47K 5% 1/16W	
R261	1-216-809-11	METAL GLAZE 100 5% 1/16W	
R262	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R263	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R265	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R266	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R267	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R268	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R269	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R270	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R272	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R273	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R274	1-216-813-11	METAL GLAZE 220 5% 1/16W	
R275	1-216-848-11	METAL GLAZE 180K 5% 1/16W	
R276	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R278	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R279	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
R281	1-216-857-11	METAL GLAZE	1M	5%	1/16W
R282	1-216-809-11	METAL GLAZE	100	5%	1/16W
R283	1-216-843-11	METAL GLAZE	68K	5%	1/16W
R284	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R285	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R286	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W
R287	1-216-809-11	METAL GLAZE	100	5%	1/16W
R288	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R289	1-216-824-11	METAL GLAZE	1.8K	5%	1/16W
R290	1-216-864-11	METAL GLAZE	0	5%	1/16W
R291	1-216-864-11	METAL GLAZE	0	5%	1/16W
R292	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R293	1-216-838-11	METAL GLAZE	27K	5%	1/16W
R294	1-216-835-11	METAL GLAZE	15K	5%	1/16W
R295	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R296	1-216-813-11	METAL GLAZE	220	5%	1/16W
R297	1-216-809-11	METAL GLAZE	100	5%	1/16W
R298	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R299	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R300	1-216-835-11	METAL GLAZE	15K	5%	1/16W
R477	1-216-864-11	METAL GLAZE	0	5%	1/16W
R478	1-216-864-11	METAL GLAZE	0	5%	1/16W

CRYSTAL

Ref.No	Part No.	Description
X221	1-577-119-21	OSCILLATOR, CRYSTAL (28.375MHz)
X261	1-567-733-11	VIBRATOR, CRYSTAL (17MHz)

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*A-7061-758-A VC-55P BOARD, COMPLETE

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(Ref. No. 4000series)

A-7068-144-A MX-7P BOARD, COMPLETE (HIC)

A-7068-145-A CP-20P BOARD, COMPLETE (HIC)

1-629-189-11 FP-154 FLEXIBLE BOARD

CAPACITOR

Ref.No	Part No.	Description			Remark
C301	1-135-091-00	TANTAL. CHIP	1MF	20%	16V
C302	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C303	1-126-206-11	ELECT CHIP	100MF	20%	6.3V
C304	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V
C305	1-162-942-11	CERAMIC CHIP	12PF	5%	50V
C306	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V
C307	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V
C308	1-126-206-11	ELECT CHIP	100MF	20%	6.3V
C309	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C310	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V
C311	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C312	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V
C313	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V
C314	1-126-205-11	ELECT CHIP	47MF	20%	6.3V
C316	1-162-943-11	CERAMIC CHIP	15PF	5%	50V
C317	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C318	1-162-638-11	CERAMIC CHIP	1MF		16V
C319	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C320	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C330	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V
C331	1-135-150-21	TANTAL. CHIP	3.3MF	20%	6.3V
C332	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V
C333	1-135-150-21	TANTAL. CHIP	3.3MF	20%	6.3V
C334	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C335	1-135-157-21	TANTAL. CHIP	10MF	20%	6.3V
C336	1-135-072-21	TANTAL. CHIP	0.22MF	20%	35V
C337	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V
C338	1-135-150-21	TANTAL. CHIP	3.3MF	20%	6.3V
C339	1-135-150-21	TANTAL. CHIP	3.3MF	20%	6.3V
C340	1-135-150-21	TANTAL. CHIP	3.3MF	20%	6.3V
C341	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C342	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C343	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C400	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C401	1-164-005-11	CERAMIC CHIP	0.47PF		25V
C402	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C403	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C404	1-135-091-00	TANTAL. CHIP	1MF	20%	16V
C405	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C406	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C407	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C408	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C409	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C410	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C411	1-135-091-00	TANTAL. CHIP	1MF	20%	16V
C412	1-162-638-11	CERAMIC CHIP	1MF		16V
C413	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C414	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C415	1-124-566-11	ELECT	120MF	20%	6.3V
C416	1-162-943-11	CERAMIC CHIP	15PF	5%	50V
C417	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V
C418	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V
C419	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C420	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C421	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C422	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C423	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C424	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C425	1-164-005-11	CERAMIC CHIP	0.47PF		25V
C429	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V
C430	1-135-150-21	TANTAL. CHIP	3.3MF	20%	6.3V
C431	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C432	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C433	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C434	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C435	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V
C436	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C437	1-135-149-21	TANTAL. CHIP	2.2MF	20%	10V
C438	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V
C439	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C440	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C446	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C447	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C448	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V
C449	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V

CONNECTOR

Ref.No	Part No.	Description
CN301	*1-565-876-11	PIN, CONNECTOR (PC BOARD) 4P

DIODE

Ref.No	Part No.	Description
D312	8-719-404-32	DIODE MA141WA
D313	8-719-404-46	DIODE MA110
D314	8-719-100-03	DIODE 1S2836

FILTER

Ref.No	Part No.	Description
FL301	1-236-545-11	FILTER, LOW PASS (PAL)
FL303	1-236-192-11	FILTER , LOW PASS
FL305	1-415-635-21	DL (LC)
FL306	1-415-638-11	DL, LC

IC

Ref.No	Part No.	Description
IC301	8-759-031-75	IC MC68HC05N4-SC406659

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
IC302	8-759-106-23	IC UPD4066BG	
IC303	8-759-100-95	IC UPC324G2	
IC304	8-752-033-34	IC CXA1072R	
IC305	8-759-946-00	IC MB88341PFV	
IC306	8-759-101-12	IC UPC311G2	

COIL

Ref.No	Part No.	Description	Remark
L301	1-412-029-11	INDUCTOR CHIP 10UH	
L302	1-410-204-31	INDUCTOR CHIP 10UH	
L341	1-410-215-31	INDUCTOR CHIP 82UH	
L344	1-410-204-31	INDUCTOR CHIP 10UH	
L345	1-410-180-51	INDUCTOR CHIP 0.1UH	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q300	8-729-905-35	TRANSISTOR 2SC4081-R	
Q301	8-729-402-78	TRANSISTOR XN6401	
Q302	8-729-905-35	TRANSISTOR 2SC4081-R	
Q303	8-729-905-35	TRANSISTOR 2SC4081-R	
Q304	8-729-905-35	TRANSISTOR 2SC4081-R	
Q305	8-729-905-35	TRANSISTOR 2SC4081-R	
Q306	8-729-905-23	TRANSISTOR 2SA1576-R	
Q307	8-729-905-35	TRANSISTOR 2SC4081-R	
Q308	8-729-905-35	TRANSISTOR 2SC4081-R	
Q321	8-729-905-XX	TRANSISTOR DTC114TU	
Q322	8-729-403-10	TRANSISTOR XN6215	
Q323	8-729-403-07	TRANSISTOR XN1213	
Q324	8-729-905-35	TRANSISTOR 2SC4081-R	
Q325	8-729-905-35	TRANSISTOR 2SC4081-R	
Q326	8-729-403-10	TRANSISTOR XN6215	
Q327	8-729-402-78	TRANSISTOR XN6401	
Q351	8-729-905-23	TRANSISTOR 2SA1576-R	
Q352	8-729-905-23	TRANSISTOR 2SA1576-R	
Q354	8-729-905-35	TRANSISTOR 2SC4081-R	
Q355	8-729-402-84	TRANSISTOR XN4601	
Q356	8-729-403-10	TRANSISTOR XN6215	
Q358	8-729-905-35	TRANSISTOR 2SC4081	
Q359	8-729-905-35	TRANSISTOR 2SC4081	
Q360	8-729-905-35	TRANSISTOR 2SC4081	
Q361	8-729-402-84	TRANSISTOR XN4601	

RESISTOR

Ref.No	Part No.	Description				Remark
R301	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W	
R302	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R303	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R304	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R305	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R306	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R307	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R308	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R309	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R310	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R311	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R312	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R313	1-216-834-11	METAL GLAZE	12K	5%	1/16W	
R314	1-216-834-11	METAL GLAZE	12K	5%	1/16W	
R315	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R316	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R317	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R319	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R320	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R321	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R322	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R323	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R324	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R325	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R326	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R328	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R330	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R332	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R333	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R334	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R335	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R336	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R337	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R338	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R339	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R340	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W	
R341	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R342	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R343	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R344	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W	
R345	1-216-851-11	METAL GLAZE	330K	5%	1/16W	
R346	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R347	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R350	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R351	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R352	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R353	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R354	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R356	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R357	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R358	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R359	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R360	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R361	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R362	1-216-847-11	METAL GLAZE	150K	5%	1/16W	
R363	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R364	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R365	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R366	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R367	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R368	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R369	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R370	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R371	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R372	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R373	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R374	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R375	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R376	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R381	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R382	1-216-838-11	METAL GLAZE	27K	5%	1/16W	
R383	1-216-675-11	METAL CHIP	10K	0.50%	1/10W	
R384	1-216-677-11	METAL CHIP	12K	0.50%	1/10W	
R385	1-216-816-11	METAL GLAZE	390	5%	1/16W	
R386	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R387	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R388	1-216-844-11	METAL GLAZE	82K	5%	1/16W	
R389	1-216-844-11	METAL GLAZE	82K	5%	1/16W	
R390	1-216-846-11	METAL GLAZE	120K	5%	1/16W	
R392	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R393	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R394	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R395	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R396	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W	
R397	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R398	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R399	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R404	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R405	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R406	1-216-821-11	METAL GLAZE	1K	5%	1/16W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
R407	1-216-824-11	METAL GLAZE	1.8K	5%	1/16W
R408	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W
R409	1-216-853-11	METAL GLAZE	470K	5%	1/16W
R410	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W
R411	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R412	1-216-864-11	METAL GLAZE	0	5%	1/16W
R413	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R414	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W
R415	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R416	1-216-842-11	METAL GLAZE	56K	5%	1/16W
R417	1-216-842-11	METAL GLAZE	56K	5%	1/16W
R418	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R419	1-216-813-11	METAL GLAZE	220	5%	1/16W
R420	1-216-813-11	METAL GLAZE	220	5%	1/16W
R421	1-216-813-11	METAL GLAZE	220	5%	1/16W
R422	1-216-813-11	METAL GLAZE	220	5%	1/16W
R423	1-216-840-11	METAL GLAZE	39K	5%	1/16W
R424	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R425	1-216-834-11	METAL GLAZE	12K	5%	1/16W
R426	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R427	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R428	1-216-813-11	METAL GLAZE	220	5%	1/16W
R429	1-216-813-11	METAL GLAZE	220	5%	1/16W
R430	1-216-813-11	METAL GLAZE	220	5%	1/16W
R431	1-216-813-11	METAL GLAZE	220	5%	1/16W
R432	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R433	1-216-813-11	METAL GLAZE	220	5%	1/16W
R434	1-216-813-11	METAL GLAZE	220	5%	1/16W
R435	1-216-134-00	METAL GLAZE	2.2	5%	1/8W
R436	1-216-813-11	METAL GLAZE	220	5%	1/16W
R440	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R441	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R442	1-216-839-11	METAL GLAZE	33K	5%	1/16W
R443	1-216-818-11	METAL GLAZE	560	5%	1/16W
R444	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R445	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R446	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R447	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R448	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R449	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R450	1-216-841-11	METAL GLAZE	47K	5%	1/16W

TESTPOINT

TP301	*1-535-622-11	PIN, TERMINAL
TP302	*1-535-622-11	PIN, TERMINAL

CRYSTAL

X301	1-577-118-11	VIBRATOR, LITHIUM NIOBATE (4MHz)

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*A-7061-759-B AF-47P BOARD, COMPLETE

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(Ref. No. 5000series)

1-629-190-11 FP-155 FLEXIBLE BOARD

CAPACITOR

Ref.No	Part No.	Description			Remark
C451	1-162-638-11	CERAMIC CHIP	1MF		16V
C452	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C453	1-135-150-21	TANTAL. CHIP	3.3MF	20%	6.3V
C454	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C455	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C456	1-162-964-11	CERAMIC CHIP	0.001MF	10%	50V
C457	1-135-150-21	TANTAL. CHIP	3.3MF	20%	6.3V
C458	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C459	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C460	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C461	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C462	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C463	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C464	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C465	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C466	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C467	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C470	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C471	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C472	1-135-157-21	TANTAL. CHIP	10MF	20%	6.3V
C473	1-135-145-11	TANTAL. CHIP	0.47MF	20%	25V
C474	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C475	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C477	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V
C478	1-162-964-11	CERAMIC CHIP	0.001MF	10%	50V
C479	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C480	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V
C481	1-162-964-11	CERAMIC CHIP	0.001MF	10%	50V
C482	1-162-964-11	CERAMIC CHIP	0.001MF	10%	50V
C483	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C484	1-135-157-21	TANTAL. CHIP	10MF	20%	6.3V
C485	1-135-145-11	TANTAL. CHIP	0.47MF	20%	25V
C487	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C490	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C491	1-162-928-11	CERAMIC CHIP	120PF	5%	50V
C492	1-135-147-21	TANTAL. CHIP	1MF	20%	20V
C493	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C494	1-162-966-11	CERAMIC CHIP	0.0022MF	10%	50V
C495	1-164-156-11	CERAMIC CHIP	0.1MF		25V
C496	1-126-395-11	ELECT CHIP	22MF	20%	16V
C498	1-164-156-11	CERAMIC CHIP	0.1MF		25V

CONNECTOR

CN451	1-566-536-11	CONNECTOR, FPC (ZIF) 20P
CN452	*1-565-542-11	PIN, CONNECTOR (PC BOARD) 3P
CN453	*1-565-542-21	PIN, CONNECTOR (PC BOARD) 3P
CN454	*1-563-582-11	CONNECTOR, FLEXIBLE 5P
CN455	*1-565-543-11	PIN, CONNECTOR (PC BOARD) 4P
CN456	*1-565-541-11	PIN, CONNECTOR (PC BOARD) 2P

DIODE

D451	8-719-404-46	DIODE MA110
D454	8-719-404-46	DIODE MA110
D455	8-719-404-32	DIODE MA141WA

FILTER

FL451	1-236-209-11	FILTER, LOW PASS

IC

IC451	8-752-326-18	IC CXD1204R
IC452	8-759-031-76	IC MC68HC05C4-SC403774
IC453	8-759-971-93	IC MSM6219GS-VK
IC454	8-759-946-00	IC MB88341PFV
IC455	8-759-100-95	IC UPC324G2
IC456	8-759-937-56	IC S-8054ALB
IC457	8-759-103-25	IC UPD4053BG
IC458	8-759-983-70	IC LM358PS
IC459	8-759-030-73	IC SC14S66FEL

When indicating parts by reference number, please include the board name.

COIL

Ref.No	Part No.	Description				Remark
L451	1-410-381-11	INDUCTOR CHIP	10UH			
L452	1-410-655-31	INDUCTOR CHIP	120UH			

TRANSISTOR

Ref.No	Part No.	Description		Remark
Q451	8-729-403-10	TRANSISTOR	XN6215	
Q452	8-729-905-35	TRANSISTOR	2SC4081-R	
Q453	8-729-905-35	TRANSISTOR	2SC4081-R	
Q454	8-729-905-35	TRANSISTOR	2SC4081-R	
Q455	8-729-402-19	TRANSISTOR	XN6501	
Q456	8-729-402-84	TRANSISTOR	XN4601	
Q459	8-729-905-23	TRANSISTOR	2SA1576-R	
Q463	8-729-905-35	TRANSISTOR	2SC4081-R	
Q464	8-729-905-35	TRANSISTOR	2SC4081-R	
Q468	8-729-905-23	TRANSISTOR	2SA1576-R	
Q469	8-729-402-84	TRANSISTOR	XN4601	

RESISTOR

Ref.No	Part No.	Description				Remark
R453	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R454	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R455	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R456	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R458	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R459	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R460	1-216-838-11	METAL GLAZE	27K	5%	1/16W	
R461	1-216-842-11	METAL GLAZE	56K	5%	1/16W	
R462	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R463	1-216-849-11	METAL GLAZE	220K	5%	1/16W	
R464	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W	
R465	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R466	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R467	1-216-844-11	METAL GLAZE	82K	5%	1/16W	
R468	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R469	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R470	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R471	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R472	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R473	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R474	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R480	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R481	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R482	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R483	1-216-685-11	METAL CHIP	27K	0.50%	1/10W	
R484	1-216-675-11	METAL CHIP	10K	0.50%	1/10W	
R485	1-216-675-11	METAL CHIP	10K	0.50%	1/10W	
R488	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R489	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R490	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R491	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R492	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R494	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R495	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R496	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R497	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R498	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R499	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R500	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R501	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R502	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R503	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R504	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R505	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R506	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R507	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W	
R508	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R509	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R510	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R512	1-216-849-11	METAL GLAZE	220K	5%	1/16W	
R513	1-216-847-11	METAL GLAZE	150K	5%	1/16W	
R514	1-216-854-11	METAL GLAZE	560K	5%	1/16W	
R515	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R517	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R518	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R519	1-216-842-11	METAL GLAZE	56K	5%	1/16W	
R520	1-216-834-11	METAL GLAZE	12K	5%	1/16W	
R521	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R522	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R523	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R524	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R525	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W	
R526	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R527	1-216-842-11	METAL GLAZE	56K	5%	1/16W	
R528	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R529	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R531	1-216-134-00	METAL GLAZE	2.2	5%	1/8W	
R532	1-216-144-00	METAL GLAZE	5.6	5%	1/8W	
R533	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R534	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R537	1-216-813-11	METAL GLAZE	220	5%	1/16W	
R538	1-216-813-11	METAL GLAZE	220	5%	1/16W	
R540	1-216-813-11	METAL GLAZE	220	5%	1/16W	
R541	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R542	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R543	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W	
R544	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R545	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R546	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R547	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R548	1-216-824-11	METAL GLAZE	1.8K	5%	1/16W	
R549	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W	

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*A-7061-760-A DM-23P BOARD, COMPLETE

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(Ref. No. 2000series)

CAPACITOR

Ref.No	Part No.	Description				Remark
C550	1-162-974-11	CERAMIC CHIP	0.01MF		50V	
C553	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C554	1-124-778-00	ELECT CHIP	22MF	20%	6.3V	
C555	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V	
C556	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	
C557	1-162-974-11	CERAMIC CHIP	0.01MF		50V	
C558	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	
C559	1-124-779-00	ELECT CHIP	10MF	20%	16V	
C560	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C562	1-162-964-11	CERAMIC CHIP	0.001MF	10%	50V	
C563	1-162-637-11	CERAMIC CHIP	0.47MF		16V	
C564	1-124-767-00	ELECT	2.2MF	20%	50V	
C565	1-163-081-00	CERAMIC CHIP	0.22MF		25V	
C566	1-164-156-11	CERAMIC CHIP	0.1MF		25V	
C567	1-135-155-21	TANTAL. CHIP	4.7MF	20%	16V	
C568	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V	
C569	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V	
C570	1-162-970-11	CERAMIC CHIP	0.01MF	10%	25V	

CONNECTOR

Ref.No	Part No.	Description	Remark
CN550	1-506-467-11	PIN, CONNECTOR 2P	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
CN551	*1-565-542-11	PIN, CONNECTOR (PC BOARD) 3P			
CN552	1-563-585-11	CONNECTOR, FLEXIBLE 8P			
CN553	*1-565-541-11	PIN, CONNECTOR (PC BOARD) 2P			
CN554	*1-565-541-11	PIN, CONNECTOR (PC BOARD) 2P			
		DIODE			
D550	8-719-404-46	DIODE MA110			
		IC			
IC551	8-759-100-94	IC UPC358G2			
IC552	8-759-981-82	IC NJM3414M			
IC553	8-759-231-23	IC TK10500M			
IC554	8-759-030-35	IC MPC1725MR			
		COIL			
L551	1-410-381-11	INDUCTOR CHIP 10UH			
		TRANSISTOR			
Q550	8-729-402-84	TRANSISTOR XN4601			
Q551	8-729-805-25	TRANSISTOR 2SB1121			
Q552	8-729-905-35	TRANSISTOR 2SC4081-R			
Q555	8-729-905-35	TRANSISTOR 2SC4081-R			
Q556	8-729-905-23	TRANSISTOR 2SA1576-R			
Q557	8-729-907-00	TRANSISTOR DTC114EU			
Q561	8-729-901-03	TRANSISTOR DTC144WK			
Q562	8-729-402-78	TRANSISTOR XN6401			
Q563	8-729-402-78	TRANSISTOR XN6401			
Q564	8-729-402-42	TRANSISTOR UN5213			
Q568	8-729-402-84	TRANSISTOR XN4601			
		RESISTOR			
R550	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W
R551	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W
R552	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W
R553	1-216-840-11	METAL GLAZE	39K	5%	1/16W
R554	1-216-134-00	METAL GLAZE	2.2	5%	1/8W
R555	1-216-838-11	METAL GLAZE	27K	5%	1/16W
R556	1-216-838-11	METAL GLAZE	27K	5%	1/16W
R569	1-216-134-00	METAL GLAZE	2.2	5%	1/8W
R570	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R571	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R572	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R573	1-216-843-11	METAL GLAZE	68K	5%	1/16W
R574	1-216-144-00	METAL GLAZE	5.6	5%	1/8W
R575	1-216-857-11	METAL GLAZE	1M	5%	1/16W
R576	1-216-847-11	METAL GLAZE	150K	5%	1/16W
R577	1-216-835-11	METAL GLAZE	15K	5%	1/16W
R578	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W
R579	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W
R580	1-216-834-11	METAL GLAZE	12K	5%	1/16W
R581	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R582	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R583	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R584	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W
R585	1-216-840-11	METAL GLAZE	39K	5%	1/16W
R587	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R588	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W
R592	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R594	1-216-864-11	METAL GLAZE	0	5%	1/16W
R595	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W
R596	1-216-813-11	METAL GLAZE	220	5%	1/16W
R597	1-216-863-11	METAL GLAZE	3.3M	5%	1/16W
R598	1-216-864-11	METAL GLAZE	0	5%	1/16W
R601	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R604	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R605	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W
R606	1-216-835-11	METAL GLAZE	15K	5%	1/16W
R607	1-216-835-11	METAL GLAZE	15K	5%	1/16W
R608	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R609	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W
		VARIABLE RESISTOR			
RV551	1-230-875-21	RES, ADJ, METAL GLAZE 220K			

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*A-7061-761-A VF-16P BOARD, COMPLETE

(Ref. No. 3000series)

Ref.No	Part No.	Description			Remark
	*3-727-912-01	HOLDER, LED			
		CAPACITOR			
C951	1-124-442-00	ELECT	330MF	20%	6.3V
C952	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C953	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C954	1-124-257-00	ELECT	2.2MF	20%	50V
C955	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C956	1-131-388-00	TANTALUM	68MF	10%	6.3V
C957	1-162-638-11	CERAMIC CHIP	1MF		16V
C958	1-136-165-00	FILM	0.1MF	5%	50V
C959	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
C960	1-124-587-11	ELECT	220MF	20%	6.3V
C961	⚠1-163-205-00	CERAMIC CHIP	0.001MF	5%	50V
C962	⚠1-162-625-11	CERAMIC CHIP	0.0047MF	5%	50V
C963	⚠1-162-625-11	CERAMIC CHIP	0.0047MF	5%	50V
C964	⚠1-162-625-11	CERAMIC CHIP	0.0047MF	5%	50V
C965	1-126-090-11	ELECT	82MF	20%	10V
C966	1-124-438-00	ELECT	1MF	20%	50V
C968	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C969	1-162-697-11	CERAMIC	0.001MF	20%	1.5KV
C971	1-124-257-00	ELECT	2.2MF	20%	50V
		CONNECTOR			
CN951	*1-563-582-11	CONNECTOR, FLEXIBLE 5P			
CN952	*1-565-541-11	PIN, CONNECTOR (PC BOARD) 2P			
CN953	*1-565-541-11	PIN, CONNECTOR (PC BOARD) 2P			
		DIODE			
D951	8-719-404-19	DIODE LN1251C			
D953	8-719-400-20	DIODE MA152WA			
		IC			
IC951	8-759-420-01	IC AN2512S			
		COIL			
L951	1-410-831-21	INDUCTOR 82UH			
L952	1-410-388-21	INDUCTOR CHIP 39UH			
L953	⚠1-459-876-31	COIL, FERRITE (HLC)			
		TRANSISTOR			
Q953	8-729-122-63	TRANSISTOR 2SA1226			
Q954	8-729-100-66	TRANSISTOR 2SC1623			
Q955	8-729-106-68	TRANSISTOR 2SD1615A-GP			
		RESISTOR			
R953	1-216-041-00	METAL GLAZE	470	5%	1/10W
R956	1-216-133-00	METAL GLAZE	3.3M	5%	1/10W
R957	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R958	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R959	1-216-113-00	METAL GLAZE	470K	5%	1/10W

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
R960	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R961	1-216-013-00	METAL GLAZE	33	5%	1/10W
R962	1-216-336-11	METAL GLAZE	47K	1%	1/10W
R963	1-216-107-00	METAL GLAZE	270K	5%	1/10W
R964	1-216-025-00	METAL GLAZE	100	5%	1/10W
R965	1-216-306-11	METAL GLAZE	3.9	5%	1/10W
R967	1-216-047-00	METAL GLAZE	820	5%	1/10W
R968	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W
R969	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R970	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R971	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R972	1-216-101-00	METAL GLAZE	150K	5%	1/10W
R973	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R974	1-216-127-11	METAL GLAZE	1.8M	5%	1/10W
R975	1-216-133-00	METAL GLAZE	3.3M	5%	1/10W
R976	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W
R978	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R979	1-216-047-00	METAL GLAZE	820	5%	1/10W
R982	1-216-013-00	METAL GLAZE	33	5%	1/10W
R985	1-216-133-00	METAL GLAZE	3.3M	5%	1/10W
R986	1-216-131-11	METAL GLAZE	2.7M	5%	1/10W
R988	1-216-001-00	METAL GLAZE	10	5%	1/10W
R989	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R991	1-216-045-00	METAL GLAZE	680	5%	1/10W
R992	1-216-296-00	METAL GLAZE	0	5%	1/8W
R994	1-216-049-00	METAL GLAZE	1K	5%	1/10W

VARIABLE RESISTOR

RV951	1-237-663-11	RES, ADJ, METAL GRAZE 47K
RV952	1-237-657-11	RES, ADJ, METAL GRAZE 470
RV953	1-230-868-11	RES, ADJ, METAL GRAZE 2.2K
RV954	1-226-777-00	RES, ADJ, METAL GLAZE 1M

TRANSFORMER

T951	⚠1-439-449-11	TRANSFORMER ASSY, FLYBACK

THERMISTOR

TH951	1-807-938-11	THERMISTOR
W952	⚠1-540-019-21	SOCKET ASSY, CRT

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A-7061-762-A FD-10P BOARD, COMPLETE (AEP/UK)
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A-7061-944-A FD-10P BOARD, COMPLETE (AUS/E)
****
(Ref. No. 1000series)

3-732-796-01 HOLDER, LCD

CAPACITOR

Ref.No	Part No.	Description			Remark
C101	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C102	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C103	1-126-151-11	ELECT	4.7MF	20%	16V
C104	1-135-149-21	TANTAL. CHIP	2.2MF	20%	10V
C105	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C106	1-135-157-21	TANTAL. CHIP	10MF	20%	6.3V
C107	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C108	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C109	1-135-157-21	TANTAL. CHIP	10MF	20%	6.3V
C110	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C111	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C112	1-162-638-11	CERAMIC CHIP	1MF		16V
C113	1-162-638-11	CERAMIC CHIP	1MF		16V
C115	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C116	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C117	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C118	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C119	1-162-974-11	CERAMIC CHIP	0.01MF		50V
C161	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C164	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C165	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C166	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C167	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C169	1-163-091-00	CERAMIC CHIP	8PF	0.25PF	50V
C170	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C171	1-135-157-21	TANTAL. CHIP	10MF	20%	6.3V
C172	1-135-145-11	TANTAL. CHIP	0.47MF	20%	35V
C173	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C174	1-135-157-21	TANTAL. CHIP	10MF	20%	6.3V
C175	1-135-149-21	TANTAL. CHIP	2.2MF	20%	10V
C176	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C180	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C181	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C903	1-135-181-21	TANTAL. CHIP (AUS/E)	4.7MF	20%	6.3V
C904	1-135-181-21	TANTAL. CHIP (AUS/E)	4.7MF	20%	6.3V
C905	1-163-035-00	CERAMIC CHIP (AUS/E)	0.047MF		50V
C906	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C907	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C908	1-135-158-21	TANTAL. CHIP	15MF	20%	4V
C909	1-135-181-21	TANTAL. CHIP	4.7MF	20%	6.3V
C910	1-135-181-21	TANTAL. CHIP	4.7MF	20%	6.3V
C912	1-135-162-21	TANTAL. CHIP	33MF	20%	6.3V
C913	1-135-162-21	TANTAL. CHIP	33MF	20%	6.3V
C914	1-124-576-11	ELECT	220MF	20%	4V
C915	1-135-157-21	TANTAL. CHIP	10MF	20%	6.3V
C916	1-124-576-11	ELECT	220MF	20%	4V
C917	1-135-157-21	TANTAL. CHIP	10MF	20%	6.3V
C918	1-135-181-21	TANTAL. CHIP	4.7MF	20%	6.3V
C919	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C920	1-135-158-21	TANTAL. CHIP	15MF	20%	4V
C921	1-135-158-21	TANTAL. CHIP	15MF	20%	4V
C923	1-135-181-21	TANTAL. CHIP	4.7MF	20%	6.3V
C924	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C925	1-163-034-00	CERAMIC CHIP	0.033MF		50V
C926	1-135-158-21	TANTAL. CHIP	15MF	20%	4V
C927	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C928	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C929	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C930	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C931	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C932	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C933	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C935	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C936	1-135-162-21	TANTAL. CHIP	33MF	20%	6.3V

CONNECTOR

CN101	1-566-527-11	CONNECTOR, FPC (ZIF) 11P
CN102	1-506-467-11	PIN, CONNECTOR 2P
CN161	1-568-123-11	CONNECTOR,FPC(SMT TYPE ZIF)18P
CN903	*1-563-582-11	CONNECTOR, FLEXIBLE 5P

TRIMMER

CT101	1-141-331-11	CAP, VAR, TRIMMER (CHIP)

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

FD-10P

Ref.No	Part No.	Description	Remark
CT161	1-141-331-11	CAP, VAR, TRIMMER (CHIP)	
		DIODE	
D103	8-719-404-46	DIODE MA110	
D104	8-719-404-46	DIODE MA110	
D105	8-719-404-46	DIODE MA110	
D106	8-719-404-46	DIODE MA110	
D107	8-719-938-72	DIODE SB01-05CP	
D108	8-719-940-45	DIODE MA159	
D161	8-713-300-88	DIODE 1T33C	
D901	8-719-106-44	DIODE RD9.1M-B2 (AUS/E)	
D902	8-719-106-44	DIODE RD9.1M-B2 (AUS/E)	
D919	8-719-941-86	DIODE DAN202U	
D920	8-719-951-22	DIODE IMN10	
D922	8-719-941-09	DIODE DAP202U	
D923	8-719-941-86	DIODE DAN202U	
		IC	
IC101	8-759-146-85	IC UPD75316GF-031-3B9	
IC102	8-759-937-54	IC S-81250HG-RD-S	
IC103	8-759-946-03	IC S-8054ALR-S	
IC161	8-759-983-52	IC MB87484	
IC162	8-759-944-88	IC CXK58256MF-15LL	
IC901	8-752-009-51	IC CX20095A	
IC902	8-759-710-09	IC NJM2233AM	
		COIL	
L101	1-410-192-51	INDUCTOR CHIP 1UH	
L161	1-410-384-11	INDUCTOR CHIP 18UH	
L162	1-410-192-51	INDUCTOR CHIP 1UH	
L163	1-410-377-31	INDUCTOR CHIP 4.7UH	
L164	1-410-192-51	INDUCTOR CHIP 1UH	
L165	1-410-192-51	INDUCTOR CHIP 1UH	
L903	1-412-058-11	INDUCTOR CHIP 10UH	
L907	1-410-369-11	INDUCTOR CHIP 1UH	
L908	1-410-388-21	INDUCTOR CHIP 39UH	
		INDICATOR TUBE	
ND101	1-808-621-21	DISPLAY PANEL, LIQUID CRYSTAL	
		TRANSISTOR	
Q105	8-729-902-96	TRANSISTOR FMS1	
Q106	8-729-602-21	TRANSISTOR 2SC4154	
Q107	8-729-903-82	TRANSISTOR FMW2	
Q108	8-729-805-25	TRANSISTOR 2SB1121	
Q109	8-729-920-39	TRANSISTOR IMT1US	
Q110	8-729-904-20	TRANSISTOR FMA2	
Q112	8-729-602-36	TRANSISTOR 2SA1602	
Q113	8-729-905-15	TRANSISTOR DTC144WU	
Q114	8-729-109-44	TRANSISTOR 2SK94	
Q115	8-729-109-44	TRANSISTOR 2SK94	
Q116	8-729-902-96	TRANSISTOR FMS1	
Q117	8-729-902-96	TRANSISTOR FMS1	
Q118	8-729-907-26	TRANSISTOR IMX1	
Q119	8-729-920-39	TRANSISTOR IMT1US	
Q120	8-729-602-36	TRANSISTOR 2SA1602	
Q121	8-729-602-21	TRANSISTOR 2SC4154	
Q122	8-729-905-96	TRANSISTOR DTA114TU	
Q161	8-729-402-42	TRANSISTOR UN5213	
Q901	8-729-602-36	TRANSISTOR 2SA1602	
Q904	8-729-402-42	TRANSISTOR UN5213	
Q905	8-729-602-21	TRANSISTOR 2SC4154	
Q906	8-729-602-21	TRANSISTOR 2SC4151	
Q907	8-729-602-21	TRANSISTOR 2SC4154	
Q908	8-729-271-22	TRANSISTOR 2SC2712G	

Ref.No	Part No.	Description	Remark
Q909	8-729-602-21	TRANSISTOR 2SC4154	
Q910	8-729-162-44	TRANSISTOR 2SB624-BV4	
Q911	8-729-402-42	TRANSISTOR UN5213	
Q912	8-729-420-22	TRANSISTOR XN4312	
Q913	8-729-904-07	TRANSISTOR FMG2	
Q914	8-729-101-07	TRANSISTOR 2SB804-AW	
Q917	8-729-921-08	TRANSISTOR DTC144TU	
Q918	8-729-402-42	TRANSISTOR UN5213	
Q919	8-729-602-36	TRANSISTOR 2SA1602	
Q921	8-729-402-42	TRANSISTOR UN5213	
Q922	8-729-602-21	TRANSISTOR 2SC4154	
Q923	8-729-602-21	TRANSISTOR 2SC4154	
Q930	8-729-602-36	TRANSISTOR 2SA1602	
Q931	8-729-602-36	TRANSISTOR 2SA1602	
		RESISTOR	
R101	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R102	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R103	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R104	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R105	1-216-841-11	METAL GLAZE 47K 5% 1/16W	
R106	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R107	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R108	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R109	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R110	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R111	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R112	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R113	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R114	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R115	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R116	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R117	1-216-851-11	METAL GLAZE 330K 5% 1/16W	
R118	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R119	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R120	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R121	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R122	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R123	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R127	1-216-835-11	METAL GLAZE 15K 5% 1/16W	
R128	1-216-851-11	METAL GLAZE 330K 5% 1/16W	
R129	1-216-857-11	METAL GLAZE 1M 5% 1/16W	
R130	1-216-838-11	METAL GLAZE 27K 5% 1/16W	
R131	1-216-857-11	METAL GLAZE 1M 5% 1/16W	
R132	1-216-832-11	METAL GLAZE 8.2K 5% 1/16W	
R133	1-216-838-11	METAL GLAZE 27K 5% 1/16W	
R134	1-216-828-11	METAL GLAZE 3.9K 5% 1/16W	
R135	1-216-822-11	METAL GLAZE 1.2K 5% 1/16W	
R136	1-216-138-00	METAL GLAZE 3.3 5% 1/8W	
R137	1-216-831-11	METAL GLAZE 6.8K 5% 1/16W	
R138	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R139	1-216-847-11	METAL GLAZE 150K 5% 1/16W	
R140	1-216-847-11	METAL GLAZE 150K 5% 1/16W	
R141	1-216-829-11	METAL GLAZE 4.7K 5% 1/16W	
R142	1-216-843-11	METAL GLAZE 68K 5% 1/16W	
R143	1-216-861-11	METAL GLAZE 2.2M 5% 1/16W	
R144	1-216-839-11	METAL GLAZE 33K 5% 1/16W	
R145	1-216-809-11	METAL GLAZE 100 5% 1/16W	
R146	1-216-854-11	METAL GLAZE 560K 5% 1/16W	
R147	1-216-849-11	METAL GLAZE 220K 5% 1/16W	
R148	1-216-857-11	METAL GLAZE 1M 5% 1/16W	
R149	1-216-857-11	METAL GLAZE 1M 5% 1/16W	
R150	1-216-857-11	METAL GLAZE 1M 5% 1/16W	
R151	1-216-854-11	METAL GLAZE 560K 5% 1/16W	
R152	1-216-847-11	METAL GLAZE 150K 5% 1/16W	
R153	1-216-857-11	METAL GLAZE 1M 5% 1/16W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
R154	1-216-857-11	METAL GLAZE	1M	5%	1/16W
R155	1-216-839-11	METAL GLAZE	33K	5%	1/16W
R156	1-216-857-11	METAL GLAZE	1M	5%	1/16W
R157	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R158	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R159	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R160	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R161	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R162	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R163	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R164	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R165	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R166	1-216-817-11	METAL GLAZE	470	5%	1/16W
R168	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R169	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R170	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R171	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R172	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R173	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R175	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R177	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R178	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R179	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R180	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R181	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R183	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R184	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R185	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R186	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R187	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R188	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R189	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R190	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R191	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R192	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R194	1-216-817-11	METAL GLAZE	470	5%	1/16W
R195	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R196	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R197	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R198	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R199	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R291	1-216-817-11	METAL GLAZE	470	5%	1/16W
R292	1-216-817-11	METAL GLAZE	470	5%	1/16W
R293	1-216-817-11	METAL GLAZE	470	5%	1/16W
R901	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W
R902	1-216-817-11	METAL GLAZE	470	5%	1/16W
R905	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W
R906	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W
R907	1-216-835-11	METAL GLAZE	15K	5%	1/16W
R908	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W
R910	1-216-804-11	METAL GLAZE (AUS/E)	39	5%	1/16W
R911	1-216-804-11	METAL GLAZE (AUS/E)	39	5%	1/16W
R912	1-216-804-11	METAL GLAZE (AUS/E)	39	5%	1/16W
R913	1-216-804-11	METAL GLAZE (AUS/E)	39	5%	1/16W
R914	1-216-807-11	METAL GLAZE (AUS/E)	68	5%	1/16W
R915	1-216-807-11	METAL GLAZE	68	5%	1/16W
R916	1-216-807-11	METAL GLAZE	68	5%	1/16W
R923	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R924	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R925	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R926	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R927	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W
R928	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R929	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R930	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R931	1-216-816-11	METAL GLAZE	390	5%	1/16W
R932	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R933	1-216-816-11	METAL GLAZE	390	5%	1/16W
R934	1-216-817-11	METAL GLAZE	470	5%	1/16W
R935	1-216-813-11	METAL GLAZE	220	5%	1/16W
R936	1-216-818-11	METAL GLAZE	560	5%	1/16W
R937	1-216-813-11	METAL GLAZE	220	5%	1/16W
R938	1-216-807-11	METAL GLAZE	68	5%	1/16W
R939	1-216-815-11	METAL GLAZE	330	5%	1/16W
R940	1-216-817-11	METAL GLAZE	470	5%	1/16W
R941	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W
R942	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W
R943	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R944	1-216-834-11	METAL GLAZE	12K	5%	1/16W
R945	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R946	1-216-824-11	METAL GLAZE	1.8K	5%	1/16W
R947	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R948	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R949	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R950	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R951	1-216-296-00	METAL GLAZE	0	5%	1/8W
R952	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R953	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R954	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W
R960	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R961	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R962	1-216-296-00	METAL GLAZE	0	5%	1/8W
R964	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R965	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R966	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R980	1-216-296-00	METAL GLAZE	0	5%	1/8W
R981	1-216-296-00	METAL GLAZE	0	5%	1/8W
R982	1-216-296-00	METAL GLAZE	0	5%	1/8W
R983	1-216-296-00	METAL GLAZE	0	5%	1/8W
R984	1-216-296-00	METAL GLAZE	0	5%	1/8W
R986	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W
R987	1-216-138-00	METAL GLAZE	3.3	5%	1/8W

VARIABLE RESISTOR

RV901	1-230-868-11	RES, ADJ, METAL GLAZE 2.2K
RV902	1-230-868-11	RES, ADJ, METAL GLAZE 2.2K
RV903	1-230-867-11	RES, ADJ, METAL GLAZE 1K

SWITCH

S101	1-571-787-11	SWITCH, TACTILE (TITLE 1)
S102	1-571-787-11	SWITCH, TACTILE (TITLE 2)
S103	1-571-787-11	SWITCH, TACTILE (MEMORY)
S104	1-571-787-11	SWITCH, TACTILE (COLOR/MODE)
S105	1-571-787-11	SWITCH, TACTILE (ZERO MEMO)
S106	1-571-787-11	SWITCH, TACTILE (COUNTER RESET)
S107	1-571-787-11	SWITCH, TACTILE (DATE)
S108	1-571-787-11	SWITCH, TACTILE (TIME)
S109	1-571-787-11	SWITCH, TACTILE (FOCUS)
S110	1-571-787-11	SWITCH, TACTILE (WHT BAL)
S111	1-571-787-11	SWITCH, TACTILE (SENS)
S112	1-571-787-11	SWITCH, TACTILE (SHUTTE SPEED)
S113	1-570-870-11	SWITCH, SLIDE (AUTO LOCK)
S114	1-571-787-11	SWITCH, TACTILE (ZONE SELECT/PUSH AUTO)
S115	1-571-787-11	SWITCH, TACTILE (FADER)
S116	1-571-787-11	SWITCH, TACTILE (INDEX MARK)
S117	1-571-787-11	SWITCH, TACTILE (⏏)

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
		TESTPOINT	
TP101	*1-535-622-11	PIN, TERMINAL	
TP102	*1-535-622-11	PIN, TERMINAL	
TP103	*1-535-622-11	PIN, TERMINAL	
TP104	*1-535-622-11	PIN, TERMINAL	
TP901	*1-535-622-11	PIN, TERMINAL	
TP902	*1-535-622-11	PIN, TERMINAL	
		VARIABLE RESISTOR	
VR101	1-237-776-11	RES, VAR, CARBON 10K	
		CRYSTAL	
X101	1-577-291-21	VIBRATOR, CERAMIC (WITH (C))(4.19MHz)	
X102	1-527-997-00	VIBRATOR, CRYSTAL (32.76kHz)	

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A-7061-763-A MC-31P BOARD, COMPLETE

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(Ref. No. 2000series)

Ref.No	Part No.	Description	Remark
		CAPACITOR	
C701	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C703	1-163-023-00	CERAMIC CHIP 0.015MF 10% 50V	
C704	1-163-023-00	CERAMIC CHIP 0.015MF 10% 50V	
C705	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	
C706	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C708	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
C709	1-126-100-11	ELECT 10MF 20% 6.3V	
C710	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C711	1-126-603-11	ELECT CHIP 4.7MF 20% 35V	
C712	1-126-603-11	ELECT CHIP 4.7MF 20% 35V	
C713	1-126-205-11	ELECT CHIP 47MF 20% 6.3V	
C716	1-126-205-11	ELECT CHIP 47MF 20% 6.3V	
C719	1-163-023-00	CERAMIC CHIP 0.015MF 10% 50V	
C720	1-163-023-00	CERAMIC CHIP 0.015MF 10% 50V	
C722	1-163-018-00	CERAMIC CHIP 0.0056MF 10% 50V	
		CONNECTOR	
CN701	*1-565-529-21	PIN, CONNECTOR (PC BOARD) 4P	
CN702	1-565-877-11	PIN, CONNECTOR (PC BOARD) 5P	
CN703	*1-565-875-11	PIN, CONNECTOR (PC BOARD) 3P	
		DIODE	
D701	8-719-404-46	DIODE MA110	
D703	8-719-105-91	DIODE RD5.6M-B2	
		JACK	
J701	1-507-921-00	JACK (EXT MIC)	
J702	1-563-454-11	JACK, MINIATURE (DC OUT)	
		COIL	
L701	1-410-369-11	INDUCTOR CHIP 1UH	
L702	1-410-369-11	INDUCTOR CHIP 1UH	
L703	1-410-369-11	INDUCTOR CHIP 1UH	
L704	1-410-192-51	INDUCTOR CHIP 1UH	
L705	1-410-192-51	INDUCTOR CHIP 1UH	
L706	1-410-192-51	INDUCTOR CHIP 1UH	
L707	1-410-192-51	INDUCTOR CHIP 1UH	
		TRANSISTOR	
Q701	8-729-905-23	TRANSISTOR 2SA1576-R	
Q702	8-729-905-35	TRANSISTOR 2SC4081-R	
Q703	8-729-905-35	TRANSISTOR 2SC4081-R	
Q704	8-729-905-35	TRANSISTOR 2SC4081-R	
Q705	8-729-905-23	TRANSISTOR 2SA1576-R	
Q706	8-729-905-35	TRANSISTOR 2SC4081-R	
Q707	8-729-905-35	TRANSISTOR 2SC4081-R	
		RESISTOR	
R701	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R702	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R703	1-216-115-00	METAL GLAZE 560K 5% 1/10W	
R704	1-216-101-00	METAL GLAZE 150K 5% 1/10W	
R706	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R707	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R708	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R709	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R710	1-216-035-00	METAL GLAZE 270 5% 1/10W	
R711	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R712	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R713	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R714	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R715	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R716	1-216-306-11	METAL GLAZE 3.9 5% 1/10W	
R717	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R718	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R719	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R720	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R721	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R722	1-216-101-00	METAL GLAZE 150K 5% 1/10W	
R723	1-216-115-00	METAL GLAZE 560K 5% 1/10W	
R726	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R727	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
		SWITCH	
S701	1-554-123-00	SWITCH, SLIDE (BUILT IN MIC SELECT)	

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A-7061-764-A MK-5 BOARD, COMPLETE

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(Ref. No. 2000series)

Ref.No	Part No.	Description	Remark
		CAPACITOR	
C001	1-126-603-11	ELECT CHIP 4.7MF 20% 35V	
C002	1-163-035-00	CERAMIC CHIP 0.047MF 50V	
C003	1-163-099-00	CERAMIC CHIP 18PF 5% 50V	
C004	1-163-099-00	CERAMIC CHIP 18PF 5% 50V	
C005	1-163-035-00	CERAMIC CHIP 0.047MF 50V	
C006	1-162-968-11	CERAMIC CHIP 0.0047MF 10% 50V	
C007	1-126-603-11	ELECT CHIP 4.7MF 20% 35V	
C008	1-163-035-00	CERAMIC CHIP 0.047MF 50V	
C009	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	
C010	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	
C011	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C012	1-163-099-00	CERAMIC CHIP 18PF 5% 50V	
C013	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	
C014	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	
C015	1-126-603-11	ELECT CHIP 4.7MF 20% 35V	
C016	1-163-035-00	CERAMIC CHIP 0.047MF 50V	
C017	1-124-779-00	ELECT CHIP 10MF 20% 16V	
C018	1-162-974-11	CERAMIC CHIP 0.01MF 50V	
C019	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	
C020	1-163-133-00	CERAMIC CHIP 470PF 5% 50V	
C021	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	
C022	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
		CONNECTOR	
CN001	1-563-588-11	CONNECTOR, FLEXIBLE 11P	
CN002	*1-566-761-11	PIN, CONNECTOR (PC BOARD) 6P	
		DIODE	
D001	8-719-108-24	DIODE 1SS222	
D002	8-719-404-46	DIODE MA110	
D003	8-719-404-46	DIODE MA110	
		IC	
IC001	8-759-990-94	IC MB606199	
IC002	8-752-010-20	IC CX20102	
		COIL	
L001	1-412-058-11	INDUCTOR CHIP 10UH	
L002	1-412-058-11	INDUCTOR CHIP 10UH	
L003	1-412-058-11	INDUCTOR CHIP 10UH	
L004	1-410-658-31	INDUCTOR CHIP 220UH	
		TRANSISTOR	
Q003	8-729-905-35	TRANSISTOR 2SC4081-R	
Q004	8-729-905-35	TRANSISTOR 2SC4081-R	
Q005	8-729-905-35	TRANSISTOR 2SC4081-R	
Q006	8-729-905-35	TRANSISTOR 2SC4081-R	
Q007	8-729-402-42	TRANSISTOR UN5213	
Q008	8-729-162-44	TRANSISTOR 2SB624-BV4	
		RESISTOR	
R001	1-216-857-11	METAL GLAZE 1M 5% 1/16W	
R004	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R005	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R006	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R007	1-216-645-11	METAL CHIP 560 0.50% 1/10W	
R008	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R009	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R010	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R011	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R012	1-216-811-11	METAL GLAZE 150 5% 1/16W	
R013	1-216-817-11	METAL GLAZE 470 5% 1/16W	
R014	1-216-823-11	METAL GLAZE 1.5K 5% 1/16W	
R015	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R016	1-216-820-11	METAL GLAZE 820 5% 1/16W	
R017	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R018	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R019	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R020	1-216-001-00	METAL GLAZE 10 5% 1/10W	
R021	1-216-819-11	METAL GLAZE 680 5% 1/16W	
R022	1-216-811-11	METAL GLAZE 150 5% 1/16W	
R023	1-216-809-11	METAL GLAZE 100 5% 1/16W	
R024	1-216-819-11	METAL GLAZE 680 5% 1/16W	
R025	1-216-839-11	METAL GLAZE 33K 5% 1/16W	
R026	1-216-819-11	METAL GLAZE 680 5% 1/16W	
R027	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R028	1-216-819-11	METAL GLAZE 680 5% 1/16W	
R030	1-216-820-11	METAL GLAZE 820 5% 1/16W	
R031	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R033	1-216-819-11	METAL GLAZE 680 5% 1/16W	
R034	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R035	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R037	1-216-841-11	METAL GLAZE 47K 5% 1/16W	
R038	1-216-841-11	METAL GLAZE 47K 5% 1/16W	
R039	1-216-829-11	METAL GLAZE 4.7K 5% 1/16W	
R040	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R041	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R043	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
		VARIABLE RESISTOR	
RV003	1-230-868-11	RES, ADJ, METAL GLAZE 2.2K	
		CRYSTAL	
X001	1-577-553-11	VIBRATOR, CRYSTAL (11.5MHz)	

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A-7070-924-A CC-18P BOARD, COMPLETE

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(Ref. No. 3000series)

Ref.No	Part No.	Description	Remark
		CONNECTOR	
CN001	1-566-529-11	CONNECTOR, FPC (ZIF) 13P	
CN002	1-566-527-11	CONNECTOR, FPC (ZIF) 11P	
CN003	1-566-530-11	CONNECTOR, FPC (ZIF) 14P	
		DIODE	
D001	8-719-404-40	DIODE MA121	
D002	8-719-404-40	DIODE MA121	
D003	8-719-100-03	DIODE 1S2836	

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1-629-173-21 FU-66P BOARD, COMPLETE

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(Ref. No. 3000series)

Ref.No	Part No.	Description	Remark
		CAPACITOR	
C060	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	
		CONNECTOR	
CN061	1-568-112-11	CONNECTOR, BOARD TO BOARD 6P	
		COIL	
L060	1-410-337-11	INDUCTOR 1UH	
L061	1-410-337-11	INDUCTOR 1UH	
L062	1-410-337-11	INDUCTOR 1UH	
		IC LINK	
PS060⚠	1-532-841-21	LINK, IC	
PS061⚠	1-532-841-21	LINK, IC	
PS062⚠	1-532-841-21	LINK, IC	

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A-7070-926-A CD-13P BOARD, COMPLETE

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(Ref. No. 4000series)

Ref.No	Part No.	Description	Remark
	3-734-418-01	PROTECTOR, HIC	
		CAPACITOR	
C200	1-124-778-00	ELECT CHIP 22MF 20% 6.3V	
C201	1-135-146-21	TANTAL. CHIP 0.68MF 20% 25V	
C202	1-164-232-11	CERAMIC CHIP 0.01MF 10% 50V	
C203	1-126-200-11	ELECT CHIP 10MF 20% 35V	
C204	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	
C205	1-164-161-11	CERAMIC CHIP 0.0022MF 10% 50V	
C206	1-126-601-11	ELECT CHIP 2.2MF 20% 50V	
C207	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	
C208	1-135-159-21	10MF 20% 20V	
C209	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
C210	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C211	1-162-638-11	CERAMIC CHIP	1MF		16V
C212	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C213	1-135-162-21	TANTAL. CHIP	33MF	20%	6.3V
C214	1-164-005-11	CERAMIC CHIP	0.47PF		25V
C215	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V

CONNECTOR

Ref.No	Part No.	Description
CN201	1-566-516-11	CONNECTOR, FPC (ZIF) 16P

DIODE

Ref.No	Part No.	Description
D200	8-719-404-32	DIODE MA141WA
D201	8-719-404-46	DIODE MA110

IC

Ref.No	Part No.	Description
IC200	✱8-750-011-12	IC IUD24AN-10C (CCD IMAGER)

TRANSISTOR

Ref.No	Part No.	Description
Q200	8-729-421-13	TRANSISTOR XN1501
Q201	8-729-905-35	TRANSISTOR 2SC4081-R
Q202	8-729-105-53	TRANSISTOR 2SK300
Q203	8-729-402-84	TRANSISTOR XN4601

RESISTOR

Ref.No	Part No.	Description			
R200	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R201	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R202	1-216-095-00	METAL GLAZE	82K	5%	1/10W
R203	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R204	1-216-107-00	METAL GLAZE	270K	5%	1/10W
R205	1-216-093-00	METAL GLAZE	68K	5%	1/10W
R206	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R207	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R208	1-216-039-00	METAL GLAZE	390	5%	1/10W
R209	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R210	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R211	1-216-025-00	METAL GLAZE	100	5%	1/10W
R212	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R213	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R215	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R216	1-216-089-00	METAL GLAZE	47K	5%	1/10W

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1-629-170-21 PJ-21P BOARD

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(Ref. No. 5000series)

JACK

Ref.No	Part No.	Description
J901	1-566-850-31	CONNECTOR, (S) TERMINAL 4P (S VIDEO IN) (AUS/E)
J902	1-568-409-11	JACK, PIN 2P (VIDEO/AUDIO IN) (AUS/E)
J903	1-566-850-31	CONNECTOR, (S) TERMINAL 4P (S VIDEO OUT)
J904	1-537-142-11	TERMINAL BOARD (VIDEO/AUDIO/RFU DC OUT)

SWITCH

Ref.No	Part No.	Description
S901	1-570-870-11	SWITCH, SLIDE
S902	1-570-870-11	SWITCH, SLIDE (Hi 8)
S903	1-571-787-11	SWITCH, TACTILE (SLOW −)
S904	1-571-787-11	SWITCH, TACTILE (SLOW +)

TESTPOINT

Ref.No	Part No.	Description
TP903	*1-535-622-11	PIN, TERMINAL
TP904	*1-535-622-11	PIN, TERMINAL

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✱ For replacement of CCD imager, CD-13P board, complete and DT-73P board, complete read carefully the CAUTIONS FOR REPLACEMENT OF CCD IMAGER on page 81.

*1-629-175-21 LI-8P BOARD

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(Ref. No. 8000series)

*1-550-104-32 HOLDER, BATTERY

CAPACITOR

Ref.No	Part No.	Description		
C086	1-164-222-11	CERAMIC CHIP	0.22MF	25V
C087	1-164-222-11	CERAMIC CHIP	0.22MF	25V

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1-629-172-21 SW-94P BOARD

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(Ref. No. 1000series)

CONNECTOR

Ref.No	Part No.	Description
CN071	1-566-538-11	CONNECTOR, FPC (NON ZIF) 6P
CN072	1-566-760-11	PIN, CONNECTOR (PC BOARD) 5P

DIODE

Ref.No	Part No.	Description
D073	8-719-100-05	DIODE MA152WK

SWITCH

Ref.No	Part No.	Description
S070	1-570-689-11	SWITCH, KEY BOARD (REC START/STOP)
S071	1-553-977-00	SWITCH, SLIDE (STANDBY)

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1-629-174-21 JC-3P BOARD

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(Ref. No. 5000series)

CAPACITOR

Ref.No	Part No.	Description			
C070	1-124-570-11	ELECT	220MF	20%	16V
C071	1-124-570-11	ELECT	220MF	20%	16V
C072	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V

CONNECTOR

Ref.No	Part No.	Description
CN073	1-565-877-11	PIN, CONNECTOR (PC BOARD) 5P
CN074	*1-566-758-11	PIN, CONNECTOR (PC BOARD) 3P

DIODE

Ref.No	Part No.	Description
D071	8-719-106-71	DIODE RD12M-B2
D072	8-719-106-71	DIODE RD12M-B2
D074	8-719-104-31	DIODE MA151WK

JACK

Ref.No	Part No.	Description
J070	1-565-276-11	JACK, ULTRA SMALL 1P (REMOTE)
J071	1-507-921-00	JACK (EARPHONE)

COIL

Ref.No	Part No.	Description	
L075	1-410-369-11	INDUCTOR CHIP	1UH
L076	1-410-369-11	INDUCTOR CHIP	1UH

RESISTOR

Ref.No	Part No.	Description			
R070	1-216-296-00	METAL GLAZE	0	5%	1/8W
R071	1-216-296-00	METAL GLAZE	0	5%	1/8W

SWITCH

Ref.No	Part No.	Description
S072	1-554-088-00	SWITCH, KEY BOARD (REC START/STOP)

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When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
	1-629-176-21	TR-31P BOARD	
		**********	
			(Ref. No. 5000series)
		DIODE	
D083	8-719-801-26	DIODE TLR223 (TALLY)	
***			
	1-631-898-11	FK-15 BOARD	
		*********	
			(REf. No. 6000series)
		DIODE	
D082	8-719-404-40	DIODE MA121	
		SWITCH	
S080	1-571-787-11	SWITCH, TACTILE (DATA SCREEN)	
S081	1-571-787-11	SWITCH, TACTILE (INDEX)	
S082	1-571-787-11	SWITCH, TACTILE (MARK)	
S083	1-571-787-11	SWITCH, TACTILE (ERASE)	
S084	1-571-787-11	SWITCH, TACTILE (FRAME)	
S085	1-571-787-11	SWITCH, TACTILE (SLOW)	
S086	1-570-870-11	SWITCH, SLIDE (EDIT)	
S087	1-571-102-11	SWITCH, SLIDE (EJECT)	
S088	1-571-787-11	SWITCH, TACTILE (REW)	
S089	1-571-787-11	SWITCH, TACTILE (PLAY)	
S090	1-571-787-11	SWITCH, TACTILE (FF)	
S091	1-571-787-11	SWITCH, TACTILE (STOP)	
S092	1-571-787-11	SWITCH, TACTILE (PAUSE)	
S093	1-571-102-11	SWITCH, TACTILE (REC) (AUS/E)	
***			
	1-629-171-21	FC-20P BOARD	
		*********	
			(Ref. No. 7000series)
		CONNECTOR	
CN095	1-566-546-11	CONNECTOR, FPC (NON ZIF) 14P	
CN096	1-565-528-11	PIN, CONNECTOR (PC BOARD) 3P	
		DIODE	
D096	8-719-404-40	DIODE MA121	
		RESISTOR	
R095	1-216-045-00	METAL GLAZE 680 5% 1/10W	
		SWITCH	
S095	1-571-101-11	SWITCH, SLIDE (POWER)	
S096	1-571-787-11	SWITCH, TACTILE (EDIT SERCH +)	
S097	1-571-787-11	SWITCH, TACTILE (EDIT SERCH −)	
***			
	1-628-060-12	FP-89 FLEXIBLE BOARD	
		**************	
			(Ref. No. 2000series)
	1-571-664-11	SWITCH, SLIDE (ENCODER)	
	3-728-869-02	HOLDER, SENSOR	
		DIODE	
D301	8-719-801-55	PHOTO COUPLER TLP907-0	
		TRANSISTOR	
Q301	8-729-906-48	EE-TP109	
		SWITCH	
S901	1-571-099-11	SWITCH (CASSETTE DOWN)	
***			
	1-628-061-12	FP-90 FLEXIBLE BOARD	
		***************	
			(Ref. No. 2000series)
	3-728-837-01	HOLDER, LED	
	3-728-869-02	HOLDER, SENSOR	
		DIODE	
D302	8-719-940-81	DIODE GL452S	
D303	8-719-801-55	DIODE COUPLER TLP907-0	
		TRANSISTOR	
Q302	8-729-906-48	EE-TP109	
		SWITCH	
S302	1-571-680-11	SWITCH, PUSH (3 KEY) (ME/MP, MP HG, REC PROOF)	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
		MISCELLANEOUS ***********	
	1-466-063-21	UNIT, DC-DC CONVERTER	
	1-535-739-12	TERMINAL, SHAFT EARTH	
	1-537-241-21	TERMINAL BOARD (BATTERY)	
	1-542-121-11	MICROPHONE, ELECTRET CONDENSER	
	1-547-334-13	LENS, ZOOM (VCL-1108YB)	
	1-574-088-21	FIBER, OPTICAL	
	1-574-481-11	CABLE, FLAT (1.0MM PITCH) 9P	
	1-574-810-11	CABLE, FLAT (1.0MM PITCH) 20P	
	1-629-191-11	FP-156 FLEXIBLE BOARD	
	1-629-192-11	FP-158 FLEXIBLE BOARD	
	1-629-196-11	FP-164 FLEXIBLE BOARD	
	1-629-776-11	FP-202 FLEXIBLE BOARD	
	1-808-505-12	SENSOR	
	3-713-790-01	SCREW (M2X5), TAPPING, P3	
	※8-750-011-12	IU024AN-10C (CCD IMAGER)	
M901	A-7040-160-A	MOTOR ASSY, THREADING (LOADING)	
M902	8-835-331-01	MOTOR, DC U-22A (CAPSTAN)	
M904	3-707-583-01	METER ASSY, EE (IRIS)	
M905	3-707-580-01	MOTOR ASSY, PZ GEAR (ZOOM)	
M906	3-707-576-01	MOTOR ASSY, AF GEAR (FOCUS)	
S901	1-571-791-41	SWITCH, PUSH (T/W)	
V901	⚠1-452-482-11	CRT ASSY (M91JYZ60WB)	
		ACCESSORIES & PACKING MATERIALS ************************	
	1-559-457-11	CORD, CONNECTION (S VIDEO)	
	1-574-039-11	CORD, CONNECTION (AV 2PHONO)	
	*3-340-514-01	BAG, PROTECTION	
	*3-732-764-01	CUSHION (UPPER)	
	*3-732-765-01	CUSHION (LOWER)	
	3-786-604-41	MANUAL, INSTRUCTION (ENGLISH)	
	3-786-604-51	MANUAL, INSTRUCTION (FRENCH/WEST GERMANY/SPANISH) (AEP, E MODEL)	
	3-786-604-61	MANUAL, INSTRUCTION (NETHER LANDS/SWEDISH/ITALIAN) (AEP MODEL)	
		ACCESSORIES & PACKING MATERIALS (KIT) ***************************	
	A-6767-706-A	ADAPTER ASSY, RFU (RFU-89EA) (AEP/UK E MODEL)	
	A-6767-772-A	ADAPTER ASSY, RFU (RFU-89ASA) (AUS MODEL)	
	1-571-164-41	SWITCH, ANTENA CHANGE (CABLE)	
	3-712-595-13	BELT, SHOULDER	
	3-712-673-01	DRIVER (AEP/UK/E MODEL)	
	*3-734-412-31	SLEEVE, ACC KIT	
	*3-734-413-01	CUSHION (UPPER), ACC	
	*3-734-414-01	CUSHION (LOWER), ACC	
	**	AC POWER ADAPTER (AC-V30)	
	***	BATTERY PACK (NP-77)	

Note :

** Mark parts is available for repair service.

*** Mark parts is available as a optional accessories.

Ref.No	Part No.	Description	Remark
		HARDWARE LIST **********	
		SCREW	
	7-621-591-00	SCREW +K 2X4	
	7-621-772-08	SCREW +B 2X3	
	7-621-772-88	SCREW +B 2X16	
	7-627-553-37	PRESISION SCREW +P 2X3 TYPE 3	
	7-627-555-88	SCREW, PROCISION +P 1.4X1.8	
	7-685-102-19	SCREW +P 2X4 NON-SLIT TYPE 2	
	7-685-534-19	SCREW +BTP 2.6X8 TYPE N-S	
	7-685-852-04	SCREW +BVTT 2X5 (S)	
		STOP RING	
	7-624-102-04	STOP RING 1.5, TYPE -E	

※ For replacement of CCD imager, CD-13P board, complete and DT-73P board, complete read carefully the CAUTIONS FOR REPLACEMENT OF CCD IMAGER on page 81.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

SECTION 7
MECHANICAL ADJUSTMENTS

For Mechanical Adjustments

Refer to mechanical adjustment (8 mm Video MECHANICAL ADJUSTMENT MANUAL III) manual for the adjustments and checks of mechanism section and the mechanical parts replacement.
For setting of the track shift mode, however, refer to the following.

7-1. SETTING THE TRACK SHIFT MODE

[Setting Method]

1) Connect the pin ① (K IN 5) and pin ② (K OUT 6), pin ③ (K IN 4) of the FC-20P board CN096. (Refer to Fig. 7-1.)

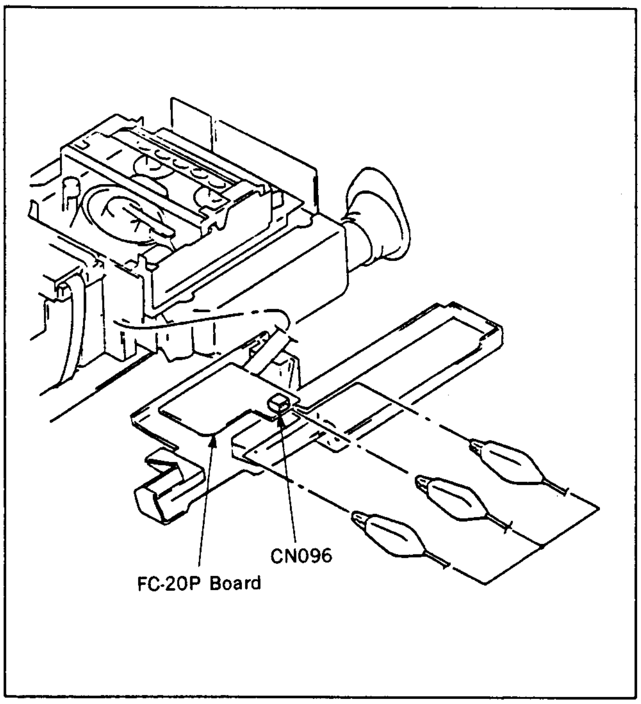

CN096
FC-20P Board

Fig. 7-1.

7-2. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surfaces (tape guide, drum, capstan shaft, pinch roller.)
2) Connect to the oscilloscope.
   MR-20 board CN802 pins ④ (RF CH 2), ⑥ (GND)
   External trigger : Pin ② (WR5-1NP)
3) Play back the tracking alignment tape (WR5-1NP) (Ref. No. J-5).
4) Check that the RF waveform of the oscilloscope is flat at both inlet and outlet sides. When not flat, make adjustment as follows. (Refer to Figs. 7-2 and 7-3.)

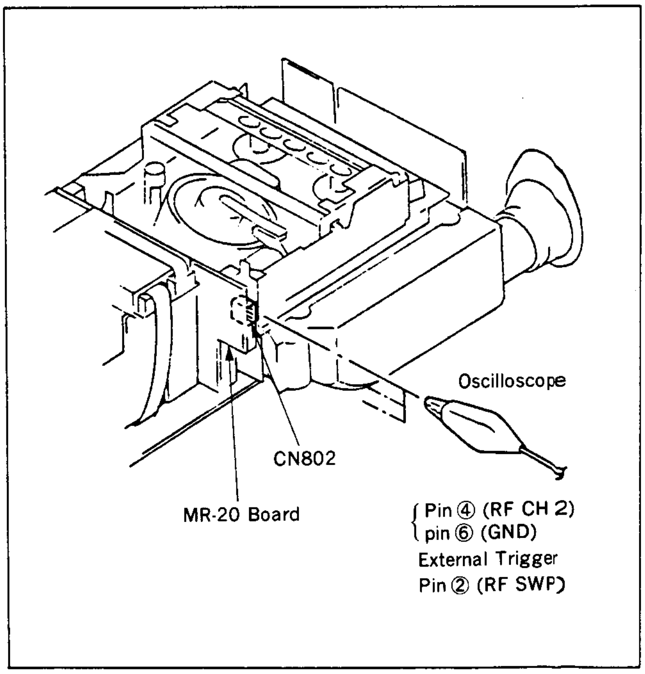

Oscilloscope
CN802
MR-20 Board
Pin ④ (RF CH 2)
pin ⑥ (GND)
External Trigger
Pin ② (RF SWP)

Fig. 7-2.

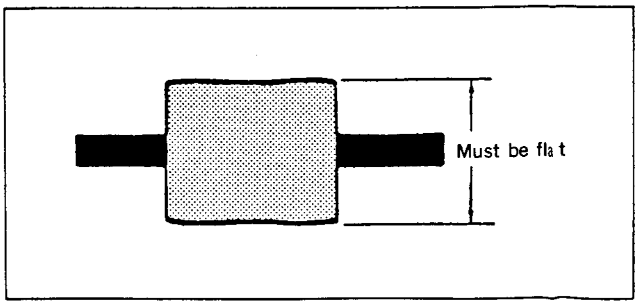

Must be flat

Fig. 7-3.

SECTION 8
CAMERA ADJUSTMENTS

See the adjusting part location diagram from on page 232 for the adjustment.

8-1. PREPARATION FOR ADJUSTMENT (CAMERA BLOCK)

8-1-1. List of Servicing Jigs

- Oscilloscope
- Stabilized power supply (2 units)
- Adjusting screwdriver
- Stop watch
- Color monitor TV
- Vectorscope
- Desk-top calculator

Ref. No.	Name	Part No.	Use
J-1	Filter (C14)	J-6080-054-A	Auto white balance adjustment
J-2	ND filter 0.4	J-6080-806-A	Iris adjustment, Iris IN/OUT adjustment (2 pcs. used), Max. gain adjustment, Auto Focus Adjustment
	ND filter 0.1	J-6080-807-A	Iris adjustment, Max. gain adjustment, Iris IN/OUT adjustment
	ND filter 1.0	J-6080-808-A	Max. gain adjustment (2 pcs. used), Auto Focus Adjustment
J-3	Pattern box PTB-500	J-6029-140-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Extension cable (4P, 1.5 mm pitch)	J-6082-069-A	To connect VC-55P board and VI-71 board
	Extension cable (6P, 1.5 mm pitch)	J-6082-036-A	To connect DC-DC converter and VC-54P board
J-6	Extension cable (20P, 1 mm pitch)	J-6082-031-A	To connect VC-54P board and AF-47P board, and FD-10 board and VI-54 board
	Extension cable (8P, 1.25 mm pitch)	J-6082-032-A	To connect SS-88P board and DC-DC converter
	Extension cable (5P, 1.25 mm pitch)	J-6082-034-A	To connect FD-10P board and AF-47P board
	Extension cable (7P, 1.25 mm pitch)	J-6082-033-A	To connect FD-10P board and DC-DC converter
J-7	Extension cable (6P, 1 mm pitch)	J-6082-018-A	To connect SW-94P board and FD-10P board
J-8	Extension cable (11P, 1 mm pitch)	J-6082-013-A	To connect FD-10P board and SS-88P board
	Extension cable (18P, 1 mm pitch)	J-6082-030-A	To connect FD-10P board and VC-55P board
J-9	Camera fixing jig	J-6080-894-A	
J-10	Siemens-star	J-6080-875-A	Flange back adjustment
J-11	Adjustment remote control	J-6082-053-A	RM-95 partly remodeled Product
J-12	AF microcomputer data reader jig	J-6082-025-A	

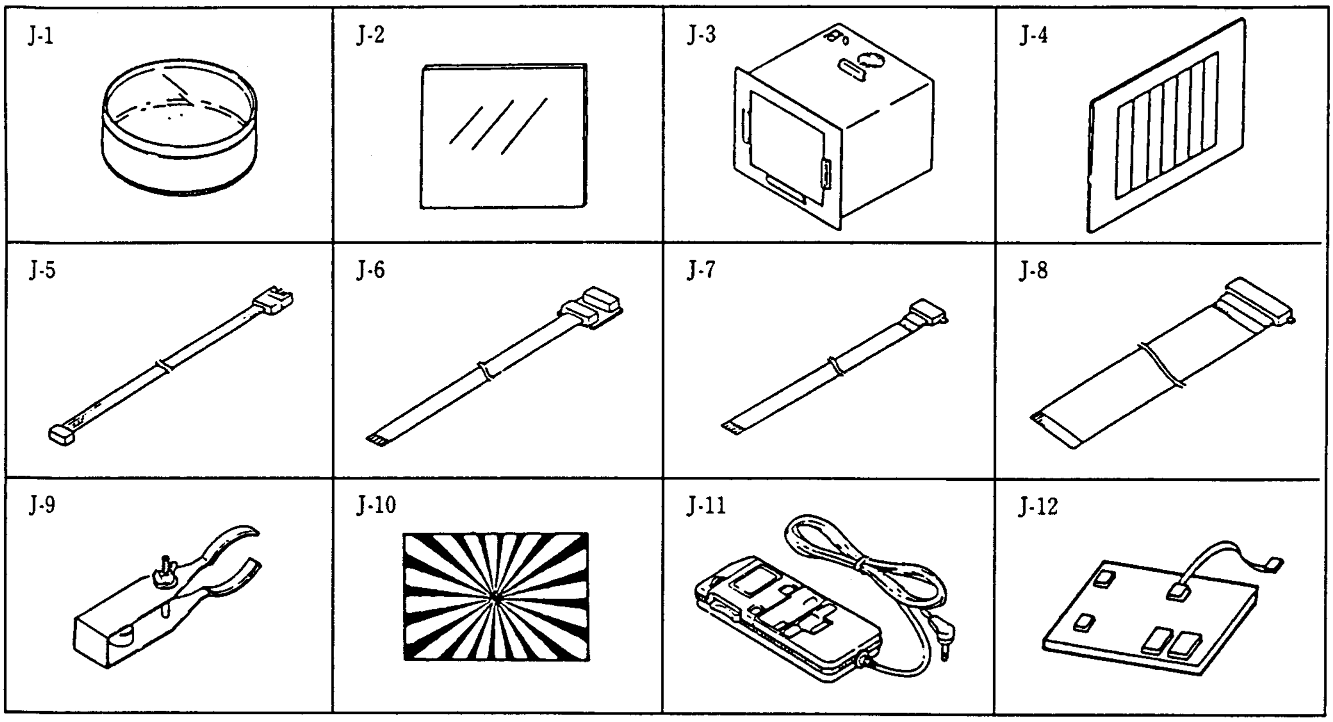

J-1
J-2
J-3
J-4
J-5
J-6
J-7
J-8
J-9
J-10
J-11
J-12

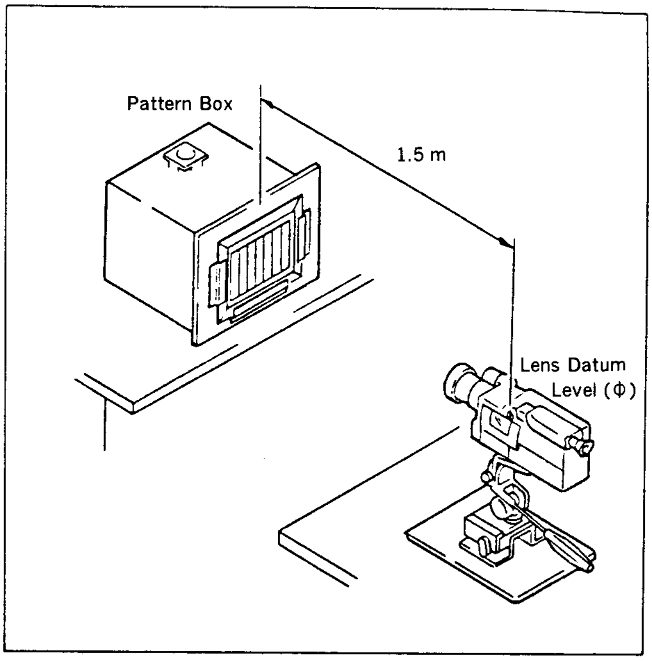
Fig. 8-1.

8-2. PREPARATION FOR ADJUSTMENT

8-2-1. Preparation

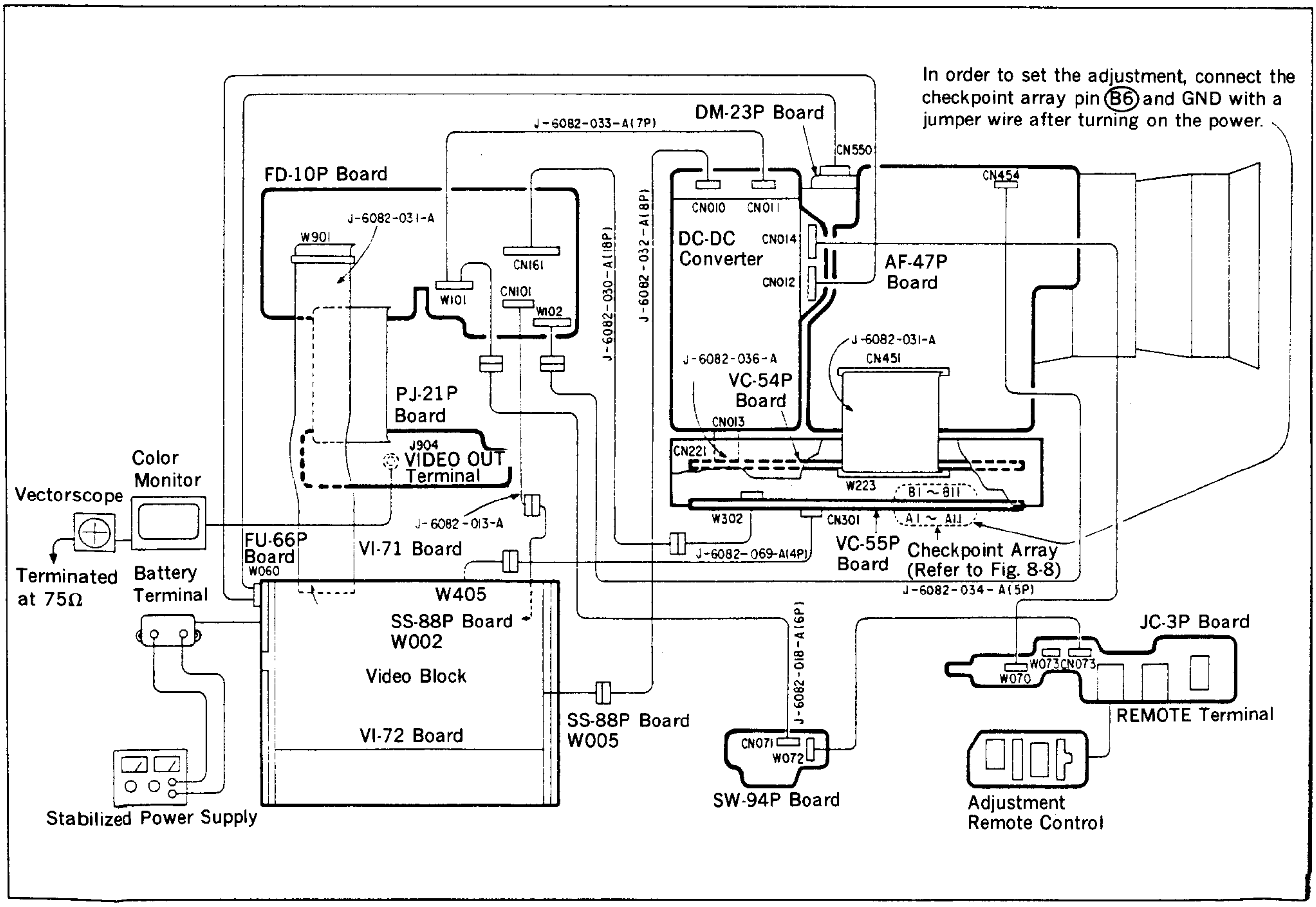
Note : For detailed cabinet and board removal procedures, refer to "SECTION 2 DISASSEMBLY"

1) Set the camera block as shown in Fig. 8-2.
2) Connect the camera block and the video block with an extension cable as shown in Fig. 8-3, and connect other adjusting devices.
3) The EVF (Electronic View Finder) is necessary to confirm the white balance mode or a shutter speed. They can be also confirmed on the monitor screen by turning on the data screen (ON/OFF at the FK-15 board S080).
4) The MK-5 board is not necessary for adjustment of the camera block. When it is obstructive, remove the following 2 connectors :
   1. MK-5 board : CN001
   2. MK-5 board : CN002
5) The zoom switch is not particularly required for adjustment. Remove the DM-23P board CN551.
6) The following 2 extension cables are provided for checking the VC-54P board.
   1. 20-pin flat extension cable between the VC-54P board W223 and AF-47P board CN451
   2. 6-pin extension cable between the VC-54P board CN221 and DC-DC converter CN013



Pattern Box
1.5 m
Lens Datum Level (Φ)

Fig. 8-2.


In order to set the adjustment, connect the checkpoint array pin ⒷⓈ and GND with a jumper wire after turning on the power.

DM-23P Board
J-6082-033-A(7P)
CN550
FD-10P Board
J-6082-031-A
W901
CN161
W101
CN101
W102
J-6082-030-A(18P)
J-6082-032-A(8P)
CN010
CN011
DC-DC Converter
CN014
CN012
AF-47P Board
CN454
J-6082-036-A
VC-54P Board
CN013
J-6082-031-A
CN451
PJ-21P Board
J904
VIDEO OUT Terminal
CN221
W223
B1 ~ B11
A1 ~ A11
W302
CN301
J-6082-013-A
J-6082-069-A(4P)
VC-55P Board
Checkpoint Array (Refer to Fig. 8-8)
J-6082-034-A(5P)
Vectorscope
Color Monitor
Terminated at 75Ω
Battery Terminal
FU-66P Board
W060
VI-71 Board
W405
SS-88P Board
W002
Video Block
VI-72 Board
SS-88P Board
W005
J-6082-018-A(6P)
CN071
W072
SW-94P Board
JC-3P Board
W070
W073
CN073
REMOTE Terminal
Adjustment Remote Control
Stabilized Power Supply

Fig. 8-3.

8-2-2. Cautions

1) Setting of the switches

Unless otherwise specified, set the switches to the following positions and make adjustment without loading a cassette.

- Camera block

1. CAMERA/VTR power switch (FC-20P board S095) ....CAMERA
2. STANDBY switch (SW-94P board S071) ....STANDBY
3. AUTO LOCK switch (FD-10P board S113) ....OFF
4. FOCUS button (FD-10P board S109) ······MANUAL
5. WHITE BALANCE button (FD-10P board S110) .... (indoor)
6. IRIS knob (FD-10P board RV101) ....Center click position
7. SHUTTER button (FD-10P board S112) ....NORMAL (1/60)
8. SENS button (FD-10P board S111) ....NORMAL

2) Adjustment order

As a rule, adjust in an described order.

3) Objects

1. Color bar chart (standard picture frame)
   When making adjustment with a color bar chart, adjust the picture frame as shown in Fig. 8-4.
2. White pattern (standard picture frame)
   Remove the color bar chart from the pattern box and adjust with the zoom lever so that the white pattern will have the same size and position as the color bar chart (standard picture frame).
3. All white pattern
   Remove the color bar chart from the pattern box and turn the zoom lever fully to the TELE side.
4. Siemens star (J-6080-875-A)
   Adjust a camera direction so that the Siemens star will be centered with the monitor screen on the monitor TV screen.

Color Bar Chart Standard Picture Frame

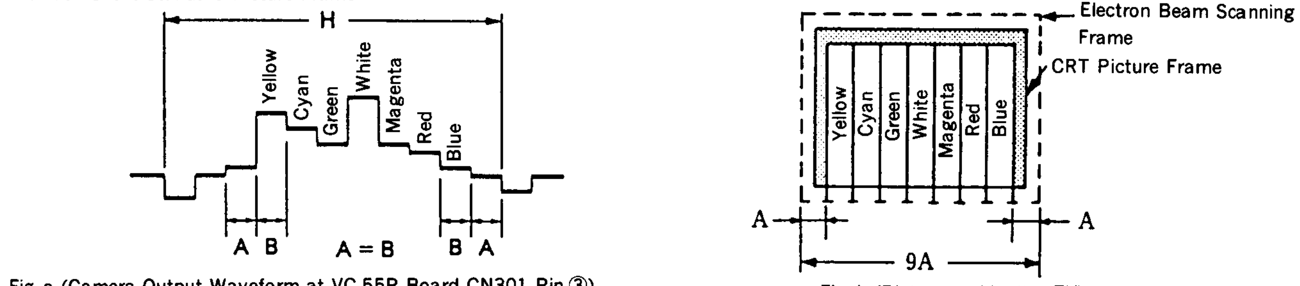

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A = B
B A
Electron Beam Scanning Frame
CRT Picture Frame
Yellow
Cyan
Green
White
Magenta
Red
Blue
A
A
9A

Fig. a (Camera Output Waveform at VC-55P Board CN301 Pin ③)

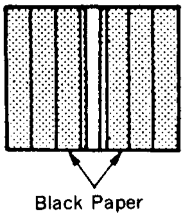
Fig. b (Picture on Monitor TV)

Adjust camera zooming and its direction to obtain the output waveform in Fig. a and the monitor TV picture in Fig. b.

Fig. 8-4.

5. High-luminance pattern
   Create a high-luminance pattern as shown in Fig. 8-5 and adjust the picture frame as shown in Fig. 8-6.

High-luminance Pattern


Black Paper

Cover the color bar chart with black paper, except half the width of its white stripe. Then, shoot the chart with the standard picture frame.

Fig. 8-5.

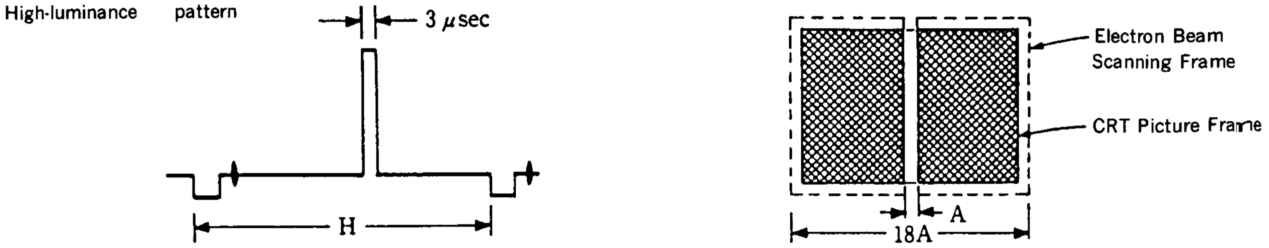

High-luminance pattern
3 μsec
H
Electron Beam Scanning Frame
CRT Picture Frame
A
18A

Fig. a (Camera Output Waveform at VC-55P Board CN301 pin ③)

Fig. b (Picture on Monitor TV)

Adjust camera zooming and its direction to obtain the output waveform in Fig. a and the monitor TV picture in Fig. b.

Fig. 8-6.

8-2-3. Adjustment Remote Control

In the camera block, the EVR (Electronic Variable Resistor) is used as an adjustment element in place of a conventional semi-fixed resistor. The EVR is controlled by the EVR/AWB microcomputer (VC-55P board IC301). This microcomputer reads the data written in the non-volatile memory inside the microcomputer and sends it to the EVR. The EVR generates an adjustment voltage by D-A conversion of this data (8 bits per one adjustment point).

To adjust, the camera block, therefore, it is necessary to rewrite the adjustment data written in the non-volatile memory. The adjustment remote control is used for this purpose.

The adjustment remote control performs bidirectional communications with the microcomputer in the camera block through a remote control signal line (LANC). UP/DOWN commands for adjustment address and data are sent from the adjustment remote control to the microcomputer in the camera block. Sent from the microcomputer in the camera block to the adjustment remote control are the adjustment address and data.

1. Using the Adjustment Remote Control

Solder a lead wire, etc. to the checkpoint array pin (B6) of the VC-55 board (refer to 8-2-4).

1) Connect the adjustment remote control to the REMOTE terminal (JC-3P board J070).
(Shift the HOLD switch of the adjustment remote control to the HOLD position (SERVICE position).)
2) Turn on the power for the main unit.
3) Connect the checkpoint array pin (B6) (CAM ADJ) and GND with a jumper wire.
(By this connection, the EVR/AWB microcomputer stops regular remote control operation and starts adjustment-only communications.)
Note : Be sure to make this connection after turning on the power.
If the connection is correct, the following is displayed on the adjustment remote control LCD. (The adjustment data varies from one set to another.)

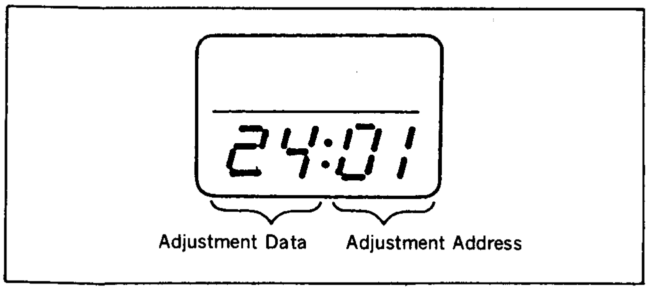


Fig. 8-7.

4) Specify your desired adjustment address by the adjustment remote control. Pressing the FF (▶▶) button increments the adjustment address, and pressing the REW (◀◀) button decrements it.
(The adjustment address is shown in the decimal number and there are 89 of them from 01 to 89. The adjustment address corresponds to the output terminal of the EVR (IC305 on the VC-55P board, IC003 on the CP-20P board, and IC454 of the AF-47P board). Refer to Table 8-3 for adjustment of each address.)
5) Make adjustment by increasing/decreasing the adjustment data.
Pressing the PLAY (▶) button increases the adjustment data, and pressing the STOP (■) button decreases it.

- The adjustment data is shown in the hexadecimal number and assumes 256 kinds of values ranging from 00 to FF.

Hexadecimal No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Indication of LCD	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal converted value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 8-1.

- The adjustment data corresponds to the output voltage of the EVR (IC305 on the VC-55P board, IC003 on the CP-20P board, and IC454 on the AF-47P board) as follows :

Adjustment Data Decimal Converted Value in ( )	EVR Output Voltage
F F (=255)	Max. value (approx.5V DC)
F 0 (=240)	↑
E 0 (=224)	
D 0 (=208)	
C 0 (=192)	
B 0 (=176)	
A 0 (=160)	
9 0 (=144)	
8 0 (=128)	Center value (approx. 2.5V DC)
7 0 (=112)	
6 0 (=96)	
5 0 (=80)	
4 0 (=64)	
3 0 (=48)	
2 0 (=32)	
1 0 (=16)	↓
0 0 (= 0)	Min. value (approx. 0V DC)

Table 8-2.

6) Change the adjustment address with the FF (▶▶) or REW (◀◀) button in order to store the adjustment data into the non-volatile memory built in the EVR/AWB microcomputer (VC-55P board IC301).
(If this operation is omitted, new adjustment data will not be stored into the non-volatile memory.)
7) There is a function provided to make note of the last error cuased by the COUNTER RESET button during operation of the set even if the power is turned off. This LAST MEMO EMERGENCY (last error) can be cleared.

2. Cautions for Using the Adjustment Remote Control

Erroneous operation of the adjustment remote control may delete correct adjustment data. To avoid this, it is recommended to make note of all the adjustment data before adjustment and of new adjustment data every time adjustment of one item is completed.

3. List of Adjustment Addresses

Adjustment Address	Adjustment Voltage Output Terminal	Adjustment Item	Remarks	Memo Column
01	CP-20P board IC003 pin ⑱	DELTA R	Auto white balance adjustment	
02	CP-20P board IC003 pin ⑲	DELTA B		
03	CP-20P board IC003 pin ②	TITLE PEDESTAL		
04	CP-20P board IC003 pin ③	C-PED	Fixed at "95"	95
05	CP-20P board IC003 pin ④	R-Y GAIN	Color reproducibility (gain) adjustment	
06	CP-20P board IC003 pin ⑤	B-Y GAIN		
07	CP-20P board IC003 pin ⑥	R-Y HUE	Color reproducibility (hue) adjustment	
08	CP-20P board IC003 pin ⑦	B-Y HUE		
09	CP-20P board IC003 pin ⑧	TITLE A/D		
10	CP-20P board IC003 pin ⑨	CHARACTER		
11	CP-20P board IC003 pin ⑫	R GAIN	Pre-white balance	
12	CP-20P board IC003 pin ⑬	B GAIN		
13	VC-55P board IC305 pin ⑱	C1 GAIN	Chroma matrix adjustment	
14	VC-55P board IC305 pin ⑲	Y1 GAIN	Y matrix adjustment	
15	VC-55P board IC305 pin ②	CHROMA LEVEL		
16	VC-55P board IC305 pin ③	BURST LEVEL		
17	VC-55P board IC305 pin ④	HUE CONT		
18	VC-55P board IC305 pin ⑤	SYNC LEVEL		
19	VC-55P board IC305 pin ⑥	SET UP		
20	VC-55P board IC305 pin ⑦	WHITE CLIP		
21	VC-55P board IC305 pin ⑧	Y LEVEL		
22	VC-55P board IC305 pin ⑨	APERTURE		
23	VC-55P board IC305 pin ⑫	YH LEVEL		
24	VC-55P board IC305 pin ⑬	C2 GAIN		
25	AF-47P board IC454 pin ⑱	IRIS		
26	AF-47P board IC454 pin ⑲	FOCUS SPEED		
27	AF-47P board IC454 pin ②	HALL OFFSET		
28	AF-47P board IC454 pin ③	MAX GAIN		
29	AF-47P board IC454 pin ④	————		———
30	AF-47P board IC454 pin ⑤	V SUB 1		
31	AF-47P board IC454 pin ⑥	V SUB 2		
32	AF-47P board IC454 pin ⑦	AGC		
33		————		———
34		————		———
35		————		———
36		————		———

Table 8-3 (1).

<table>
<tr><th>Adjustment Address</th><th>Adjustment Voltage Output Terminal</th><th>Adjustment Item</th><th>Remarks</th><th>Memo Column</th></tr>
<tr><td>37</td><td></td><td>MODE</td><td>The following adjustment mode is selected by changing the adjustment data.
<table>
<tr><th>Adjustment data.</th><th>Adjustment Mode</th></tr>
<tr><td>00</td><td>Cancel</td></tr>
<tr><td>01</td><td>Focus hunting</td></tr>
<tr><td>03</td><td>Zoom position</td></tr>
<tr><td>05</td><td>HALL, IRIS CLOSE</td></tr>
<tr><td>07</td><td>HALL, IRIS OPEN</td></tr>
<tr><td>09</td><td>HALL IN/OUT Threshold</td></tr>
<tr><td>0B</td><td>Auto focus LLA</td></tr>
<tr><td>FD</td><td>Auto focus filter fixed at FA</td></tr>
<tr><td>FF</td><td>Auto focus filter fixed at FH</td></tr>
</table></td><td>00</td></tr>
<tr><td>38</td><td></td><td>LLA</td><td>Auto focus LLA adjustment</td><td></td></tr>
<tr><td>39</td><td></td><td>MACRO</td><td></td><td></td></tr>
<tr><td>40</td><td></td><td>IN/OUT DOOR</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>41</td><td></td><td>LOW CONT</td><td rowspan="5">Auto focus adjustment</td><td></td></tr>
<tr><td>42</td><td></td><td>FA-SM</td><td></td></tr>
<tr><td>43</td><td></td><td>FH-SM</td><td></td></tr>
<tr><td>44</td><td></td><td>FA-B</td><td></td></tr>
<tr><td>45</td><td></td><td>FH-B</td><td></td></tr>
<tr><td>46</td><td></td><td>M12 THR</td><td>Fixed at 82</td><td>82</td></tr>
<tr><td>47</td><td></td><td>GETA-H</td><td>Auto focus adjustment</td><td></td></tr>
<tr><td>48</td><td></td><td>FA BASE</td><td>Fixed at 20</td><td>20</td></tr>
<tr><td>49</td><td></td><td>THR STEP</td><td rowspan="2">Auto focus adjustment</td><td></td></tr>
<tr><td>50</td><td></td><td>KATAMUKI</td><td></td></tr>
<tr><td>51</td><td></td><td>BACK RUSH</td><td>Fixed at 01</td><td>01</td></tr>
<tr><td>52</td><td></td><td>FHW</td><td>Auto focus adjustment</td><td></td></tr>
<tr><td>53</td><td></td><td>HANT LIMIT</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>54</td><td></td><td>AGC W</td><td></td><td></td></tr>
<tr><td>55</td><td></td><td>AGC B</td><td></td><td></td></tr>
<tr><td>56</td><td></td><td>BASE H</td><td></td><td></td></tr>
<tr><td>57</td><td></td><td>IRIS IN</td><td rowspan="2">IRIS IN/OUT adjustment</td><td></td></tr>
<tr><td>58</td><td></td><td>IRIS OUT</td><td></td></tr>
<tr><td>59</td><td></td><td>START R</td><td>Preset R CONT data at reset start time</td><td>30</td></tr>
<tr><td>60</td><td></td><td>START B</td><td>Preset B CONT data at reset start time</td><td>41</td></tr>
<tr><td>61</td><td></td><td>BTM SLP R</td><td>Fixed at 23</td><td>23</td></tr>
<tr><td>62</td><td></td><td>BTM SLP B</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>63</td><td></td><td>MDL SLP R</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>64</td><td></td><td>MDL SLP B</td><td>Fixed at 00</td><td>00</td></tr>
</table>

Table 8-3 (2).

<table>
<tr><th>Adjustment Address</th><th>Adjustment Voltage Output Terminal</th><th>Adjustment Item</th><th>Remarks</th><th>Memo Column</th></tr>
<tr><td>65</td><td></td><td>TOP SLP R</td><td>Fixed at 10</td><td>10</td></tr>
<tr><td>66</td><td></td><td>TOP SLP B</td><td>Fixed at 01</td><td>01</td></tr>
<tr><td>67</td><td></td><td>KEIKO R</td><td>Fixed at 41</td><td>41</td></tr>
<tr><td>68</td><td></td><td>KEIKO B</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>69</td><td></td><td>BTM UP</td><td>Fixed at 45</td><td>45</td></tr>
<tr><td>70</td><td></td><td>BTM DWN</td><td>Fixed at 33</td><td>33</td></tr>
<tr><td>71</td><td></td><td>MDL UP</td><td>Fixed at 7C</td><td>7C</td></tr>
<tr><td>72</td><td></td><td>MDL DWN</td><td>Fixed at 69</td><td>69</td></tr>
<tr><td>73</td><td></td><td>TOP UP</td><td>Fixed at 8F</td><td>8F</td></tr>
<tr><td>74</td><td></td><td>TOP DWN</td><td>Fixed at 6C</td><td>6C</td></tr>
<tr><td>75</td><td></td><td>KEIKO DWN</td><td>Fixed at 9E</td><td>9E</td></tr>
<tr><td>76</td><td></td><td>R DWN LMT</td><td rowspan="4">Auto white balance adjustment</td><td></td></tr>
<tr><td>77</td><td></td><td>B UP LMT</td><td></td></tr>
<tr><td>78</td><td></td><td>R OUT LMT</td><td></td></tr>
<tr><td>79</td><td></td><td>B OUT LMT</td><td></td></tr>
<tr><td>80</td><td></td><td>R OUT DOOR</td><td rowspan="2">Auto white balance adjustment</td><td></td></tr>
<tr><td>81</td><td></td><td>B OUT DOOR</td><td></td></tr>
<tr><td>82</td><td></td><td>RESET TM</td><td>Fixed at 3C</td><td>3C</td></tr>
<tr><td>83</td><td></td><td>DELAY TM</td><td>Auto white balance tracking speed, Fixed at 10</td><td>10</td></tr>
<tr><td>84</td><td></td><td>FAST TM</td><td>Fixed at 20</td><td>20</td></tr>
<tr><td>85</td><td></td><td>CAM DDS 0</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>86</td><td></td><td>CAM DDS 1</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>87</td><td></td><td>CAM DDS 2</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>88</td><td></td><td>CAM ALN</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>89</td><td></td><td>AWB mode</td><td>The following auto white balance adjustment mode is selected by changing the adjustment data.
<table>
<tr><th>Adjustment Data</th><th>Adjustment Mode</th></tr>
<tr><td>00</td><td>Cancel
(setting upon shipment)</td></tr>
<tr><td>10</td><td>White balance value output
(within tracking zone)</td></tr>
<tr><td>E0</td><td>Auto white balance adjustable</td></tr>
<tr><td>F0</td><td>Auto white balance tracking zone judgment disable</td></tr>
</table></td><td>00</td></tr>
</table>

Table 8-3 (3).

8-2-4. Checkpoint Array

Most measurement points for adjustment of the camera block are concentrated on the checkpoint array of the VC-55P board.

Solder a short lead wire, etc. to the terminal required for adjustment and connect an oscilloscope. Table 8-4 shows the terminal numbers and signal names of the checkpoint array.

Terminal No.	Signal Name	Terminal No.	Signal Name
A1	G OUT	B1	ID
A2	N.C	B2	N.C
A3	N.C	B3	Y (LPF) OUT
A4	Y0	B4	V SUB
A5	Y1	B5	AW ADJ
A6	C0	B6	$\overline{\text{CAM ADJ}}$
A7	C1	B7	MODE
A8	N.C	B8	VIDEO OUT
A9	YH	B9	SHUTTER EN
A10	N.C	B10	GND
A11	N.C	B11	CCD OUT

Table 8-4.

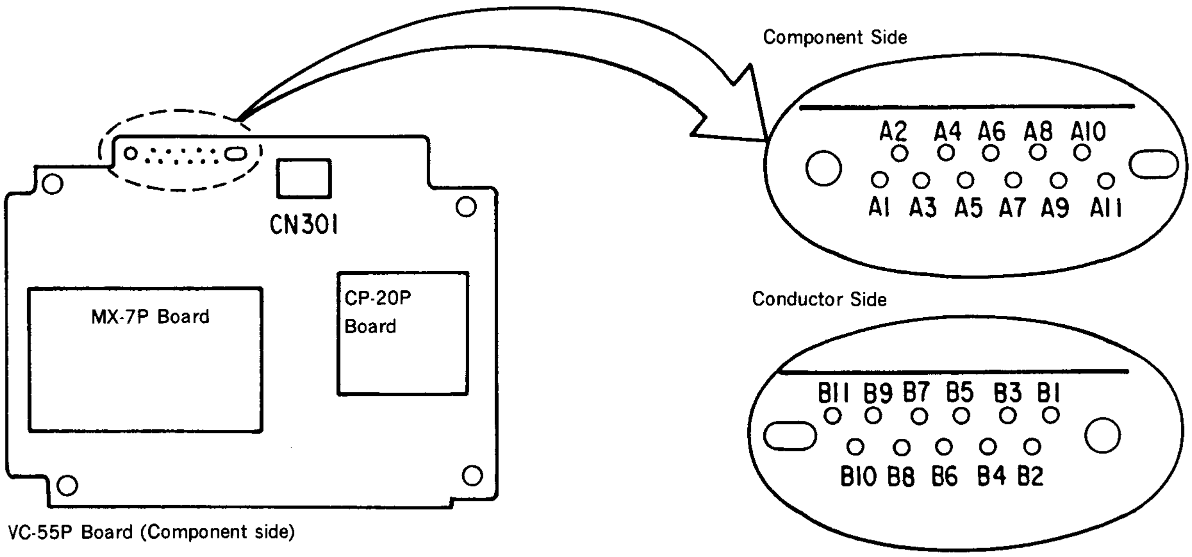

Component Side
A2 A4 A6 A8 A10
A1 A3 A5 A7 A9 A11
CN301
MX-7P Board
CP-20P Board
Conductor Side
B11 B9 B7 B5 B3 B1
B10 B8 B6 B4 B2
VC-55P Board (Component side)

Fig. 8-8.

8-2-5. AF Microcomputer Data Reader Jig

The AF microcomputer data reader jig converts adjustment serial data outputted from the AF microcomputer (AF-47P board IC452) (different data are outputted depending on the adjustment mode, such as HALL (iris) state, focus state, focus motor speed, zoom ring position, etc.) into 2-digit hexadecimal numbers and indicates on the LED.

[Connection]

Connect as shown in the figure below :

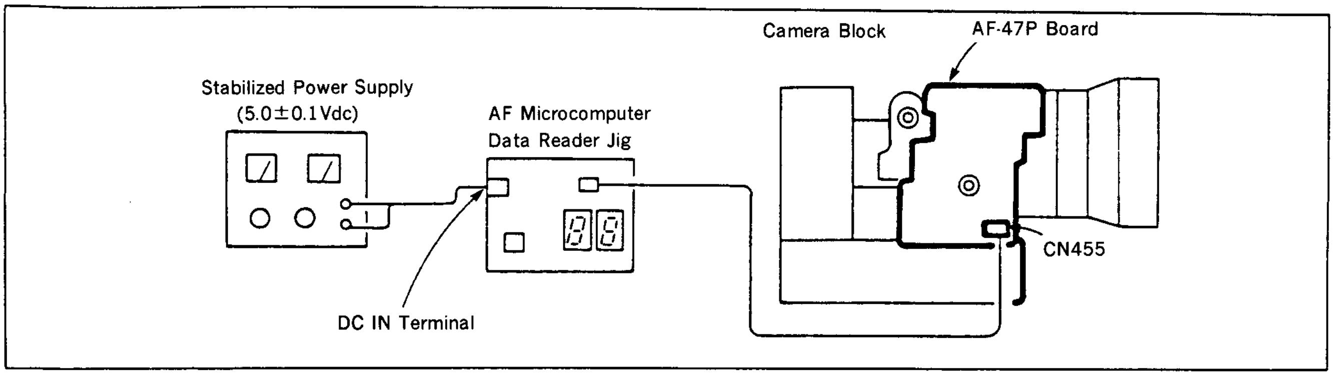


Fig. 8-9.

8-2-6. Data Processing

In order to obtain adjustment data in some adjustment items, it is necessary to compute the display data (hexadecimal number) of the AF microcomputer data reader jig and adjustment remote control.

In this case, convert the hexadecimal number into the decimal number before computation, convert its computed result back into the decimal number to assume it as the adjustment data. Table 8-5 shows a hexadecimal-decimal conversion table.

Hexadecimal — Decimal Conversion Table

Higher Digit of Hex. No. / Lower Digit of Hex. No.	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	② ↓ D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A(A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
①→ B(b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C(c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D(d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E(E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F(F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note : Values in parentheses are those displayed on the AF microcomputer reader jig or adjustment remote control.

(Example) When the AF microcomputer reader jig or adjustment remote control displays "BD (bd);
Since the higher digit of the hexadecimal number is B (b) and its lower digit is D (d), the decimal number to be obtained is "189" at an intersecting point of ① and ② in the table above.

Table 8-5.

8-3. ADJUSTMENT OF CAMERA SYSTEM

8-3-1. Flange Back Adjustment

Object	Siemens star (at 2 m in front of the lens datum level Φ mark)
Measurement point	Check with the monitor TV.
Measuring instrument	
Adjustment element	Flange back adjusting pin
Tools	Phillips screwdriver, regular screwdriver

[Adjustment Method]

1) Press the FOCUS button (FD-10P board S109) to select the MANUAL mode.
2) Place the Siemens star at a distance of 2 m in front of the lens datum level (refer to Fig. 8-2).
3) Adjust a camera block position to center the Siemens star on the monitor screen with the monitor screen.
4) Check that the lens zoom lever can be moved fully to the WIDE end (11 mm) and TELE end (88 mm), respectively, and fix it at the WIDE end. (When this is done, check also zooming operation on the monitor screen.)
5) Open the iris with the IRIS control knob (FD-10P board RV101).
   When this is done, obtain a normal image on the monitor TV screen either by adjusting illumination onto the siemens star or covering the lens with the ND filter.
6) Set the lens focusing mark at the center of "2".

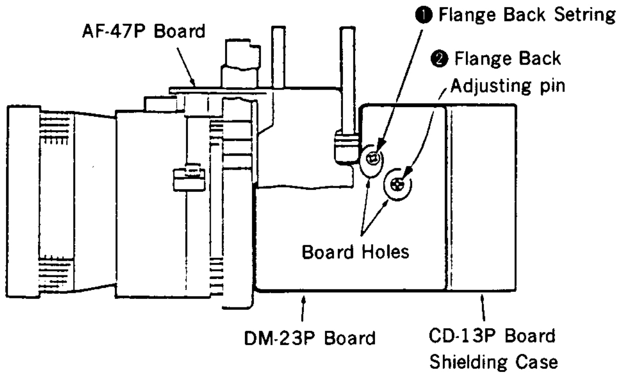

AF-47P Board
❶ Flange Back Setring
❷ Flange Back Adjusting pin
Board Holes
DM-23P Board
CD-13P Board Shielding Case

Fig. 8-10.

7) Loosen the flange back setscrew ❶ with the Phillips screwdriver. (Refer to Fig. 8-10)
8) Viewing the monitor screen, turn the glange back adjusting pin ❷ to make clearest the wedge located at the center of the Siemens star on the screen. (Turn it 2 to 3 times to the right and left to check the wedge to be clearest.)
   Note :Do not turn the adjusting pin excessively in one direction at a time.
9) Holding the flange back adjusting pin ❷ not to turn it further, tighten the flange back setscrew ❶.
10) With the zoom lever fixed at the WIDE end, turn the focusing ring and stop it at a position which provides the clearest image of the wedge. Check that the focusing ring is within the range shown in Fig. 8-11 at this time. Also, turn the focusing ring to the short distance end (1.1 m) and long distance end (∞) and check that the wedge image blurs at respective positions.

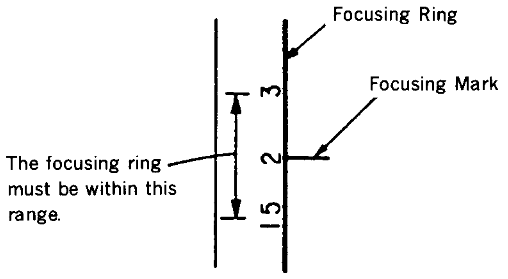

Focusing Ring
Focusing Mark
The focusing ring must be within this range.
1.5
2
3

Fig. 8-11.

11) Fix the zoom lever at the TELE end.
12) Turn the focusing ring and stop it at a position which provides the clearest wedge image. When this is done, check that the focusing ring is within a range of ±1.5mm from the center of "2".

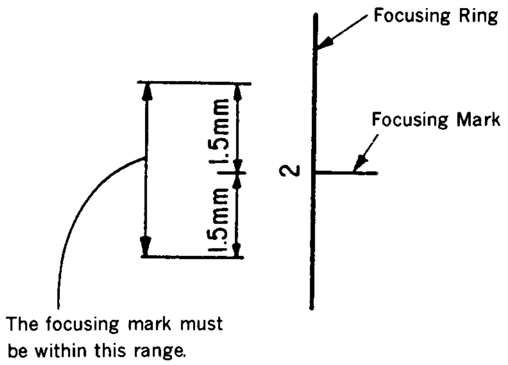

Focusing Ring
Focusing Mark
1.5mm
1.5mm
2
The focusing mark must be within this range.

Fig. 8-12.

8-3-2. Power Check (DC-DC Converter)

Measuring isntrument	Digital voltmeter
CAM 5V check	
Measurement point	CN013 pin ⑥
Specified value	5.0±0.15Vdc
CAM 7V check	
Measurement point	CN013 pin ②
Specified value	6.6±0.33Vdc
CAM 15V check	
Measurement point	CN013 pin ③
Specified value	15.0±0.45Vdc
CAM 30V check	
Measurement point	CN013 pin ⑤
Specified value	26.0±1.6Vdc

[Checking Method]

1) Each supply voltage must meet the specified value.

8-3-3. EVR Initial Setting

Make initial setting of adjustment data only when the EVR/AWB microcomputer (VC-55P board IC301) is replaced. (Pre-replacement microcomputer data will do.)

Adjustment Address	Adjustment Data Initial Value	Adjustment Address	Adjustment Data Initial Value	Adjustment Address	Adjustment Data Initial Value
01 (DELTA R)	30~70	48 (FA BASE)	20	69 (BTM UP)	45
02 (DELTA B)	30~70	49 (THR STEP)	03	70 (BTM DWN)	33
04 (C-PED)	95	50 (KATAMUKI)	04	71 (MDL UP)	7C
20 (WHITE CLIP)	FF	51 (BACK RUSH)	02	72 (MDL DWN)	69
21 (Y LEVEL)	70	52 (FH W)	00	73 (TOP UP)	8F
25 (IRIS)	68	53 (HANT LIM)	00	74 (TOP DWN)	6C
28 (MAX GAIN)	B0	56 (BASE H)	18	75 (KEIKO DWN)	9E
30 (V SUB 1)	80	59 (START R)	30	76 (R DWN LMT)	1E
31 (V SUB 2)	80	60 (START B)	41	77 (B UP LMT)	6E
32 (AGC)	FF	61 (BTM SLP R)	23	78 (R OUT LMT)	25
37 (MODE)	00	62 (BTM SLP B)	00	79 (B OUT LMT)	5B
38 (LLA)	3F	63 (MDL SLP R)	00	82 (R TM)	3C
39 (MACRO)	00	64 (MDL SLP B)	00	83 (D TM)	0D
40 (IN/OUT DOOR)	00	65 (TOP SLP R)	10	84 (F TM)	20
41 (LOW CONT)	00	66 (TOP SLP B)	01	88 (CAM ALN)	00
46 (M12 THR)	82	67 (KEIKO R)	41	89 (AWB MODE)	00
47 (GETA H)	02	68 (KEIKO B)	00		

Table 8-5.

[Adjustment Method]

1) Set the adjustment data for each adjustment address to the initial value with the adjustment remote control.

2) Change the adjustment address in order to memorize the last adjustment data.

8-3-4. V SUB Adjustment (VC-55P Board)

Object	Unnecessary
Measurement point	Checkpoint array pin(B4)(V SUB)
Measuring instrument	Digital voltmeter
Adjustment address	30 (V SUB 1) 31 (V SUB 2)
Specified value	(Imager indicated voltage)±0.05Vdc

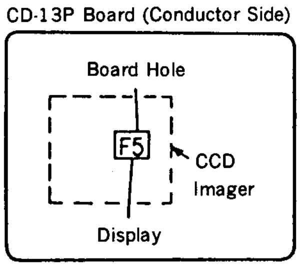
Note 1 : The adjustment address 30 (V SUB 1) is for coarse adjustment, and 31 (V SUB 2) for fine adjustment.

[Adjustment Method]

1) Change the adjustment data at the adjustment addresses 30 and 31 with the adjustment remote control, and set the V SUB voltage to the imager indicated voltage ±0.05Vdc.
2) Change the adjustment address in order to store the adjustment data.

Note 1 : The V SUB specified voltage is indicated in 2 digits, "integer symbol" and "decimal part" on the imager.

Integer Symbol	Integer Value
1	1
⋮	⋮
9	9
A	10
B	11
C	12
D	13
E	14
F	15
G	16
H	17
I	18
J	19
K	20
L	21


CD-13P Board (Conductor Side)
Board Hole
F5
CCD
Imager
Display

Example: When F5 is displayed, integer value is F=15 and decimal value is 5=0.5 therefore the V SUB voltage is 15+0.5=15.5 (V DC)

Fig. 8-13.

8-3-5. PLL Adjustment (VC-54P Boards)

Subject	Optional
Measurement point	See Fig.8-14.
Measuring instrument	Digital voltmeter
Adjustment element	CT261
Specified value	2.5±0.2Vdc

[Adjustment Method]

1) Adjust to 2.5±0.2Vdc with CT261.

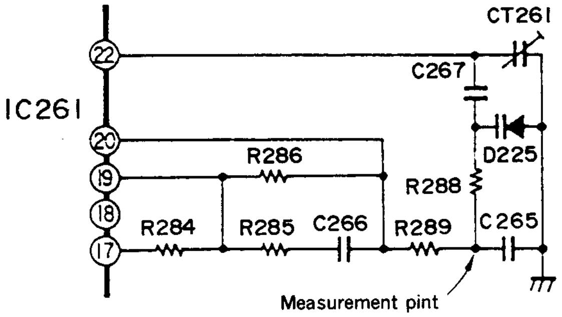

CT261
C267
IC261
22
20
19
18
17
R286
D225
R288
R284
R285
C266
R289
C265
Measurement pint

Fig. 8-14.

8-3-6. HALL Adjustment (DM-23P and AF-47P Boards)

Object	All black (Cover the lens with a black cap.)
Measurement point	AF-47P board CN455
Measuring instrument	AF microcomputer data reader jig
Adjustment element	DM-23P board RV551
Adjustment address	27 (HALL OFFSET)
Specified value	At iris close time : Minimum value of 01 to 04 At iris open time : 3D or 3E

[Adjustment Method]

1) Set RV551 to the mechanical center.
2) Select the adjustment address 37 by the adjustment remote control and set the adjustment data to be 05. (setting at iris close time)
3) Change the adjustment address to 27.
4) Change the adjustment data so that the AF microcomputer data reader jig indicates a minimum value within a range of 01 to 04. (HALL offset adjustment)
5) Change the adjustment address to 37 and set the adjustment data to 07. (setting at iris open time)
6) Adjust RV551 so that the AF microcomputer data reader jig indicates 3D or 3E. (3D is indicated as 3d .)
7) Repeat the steps 1) through 5) until the specified value is met.
8) Select the adjustment address 37 and set the adjustment data to 00.
   (cancellation of the adjustment mode)
9) Change the adjustment address in order to store the adjustment data.

8-3-7. IRIS Adjustment (VC-55P Board)

Object	Color bar chart standard picture frame
Filter	ND filter 0.4 and 0.1
Measurement point	Checkpoint array pin (B11) (CCD OUT)
Measuring instrument	Oscilloscope
Adjustment address	25 (IRIS)
Specified value	420±30 mV

[Adjustment Method]

1) Select the adjustment address 25 with the adjustment remote control.
2) With no ND filter attached, change the adjustment data with the adjustment control to adjust the IRIS OUT signal level to 420±30 mV.
3) Attach the ND filter 0.5 (0.4+0.1) in front of the lens and check that the signal level changes smoothly.
4) Remove the ND filter and check that the signal level is 420±30 mV.
5) When the specified value is not met, repeat the steps 2) through 4).
6) Change the adjustment address in order to store the adjustment data.

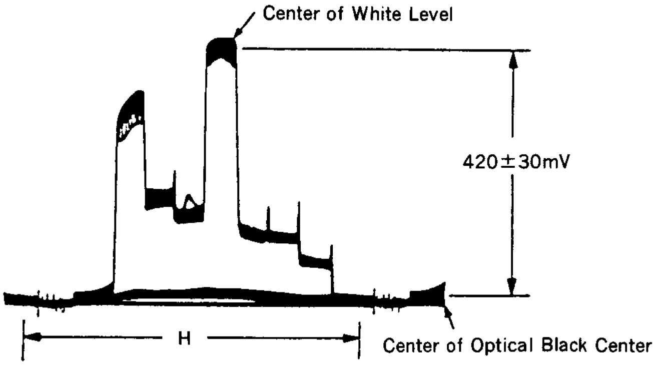


Fig. 8-15.

8-3-8. IRIS IN/OUT Adjustment (AF-47P Board)

Object	White pattern standard picture frame
Filter	ND filter : 0.4×2pcs., 0.1×1pc.
Measurement point	CN455
Measuring instrument	AF microcomputer data reader jig
Adjustment address	57 (IRIS IN) 58 (IRIS OUT)

[Adjustment Method]

1) Cover the lens with the ND filter 0.8 (0.4+0.4).
2) Select the adjustment address with the adjustment remote control and set the adjustment data to 09. (HALL IN/OUT threshold mode setting)
3) Read the AF microcomputer data reader jig data and enter this data to the adjustment address 57 as adjustment data.
4) Remove the ND filter 0.8 and attach the ND filter 0.5 (0.4+0.1).
5) Read the AF microcomputer data reader jig data and enter this data to the adjustment address 58 as adjustment data.
6) Change the adjustment address to 37 to set the adjustment data to 00. (cancellation of the HALL IN/OUT threshold mode).
7) Change the adjustment address in order to store the adjustment data.

8-3-9. AGC Adjustment (VC-55P Board)

Object	Color bar chart standard picture frame
Measurement point	Checkpoint array pin Ⓑ3 (Y (LPF) OUT)
Measuring instrument	Oscilloscope
Adjustment address	32 (AGC)
Specified value	175±5 mV

[Adjustment Method]

1) Select the adjustment address 32 with the adjustment remote control.
2) Change the adjustment data with the adjustment remote control to set the Y (LPF) signal level to 175±5 mVp-p.
3) Change the adjustment address in order to store the adjustment data.

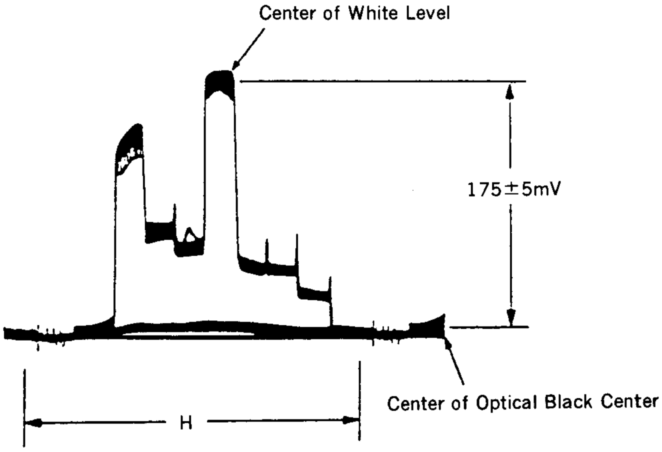


Fig. 8-16.

8-3-10. Y Signal Matrix Adjustment (VC-55P Board)

Object	Color bar chart standard picture frame
Measurement point	1 : Checkpoint array pin Ⓐ4 (Y0) 2 : Checkpoint array pin Ⓐ5 (Y1)
Measuring instrument	Oscilloscope
Adjustment address	14 (Y1 GAIN)
Specified value	Y1 signal level=Y0 signal level

[Adjustment Method]

1) Connect the oscilloscope to the checkpoint array pin Ⓐ4 and measure the Y0 signal.
2) Connect the oscilloscope to the checkpoint array pin Ⓐ5. (measurement of the Y1 signal level)
3) Select the adjustment address 14 with the adjustment remote control.
4) Change the adjustment data to coincide the Y1 signal level with the Y0 signal level measured in 1).
5) Change the adjustment address in order to store the adjustment data.

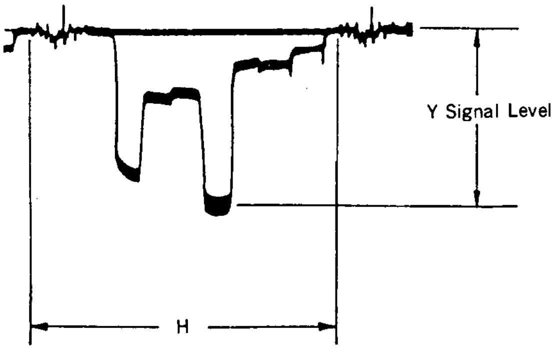


Fig. 8-17.

8-3-11. Chroma Signal Matrix Adjustment (1) (VC-55P Board)

Object	Color bar chart standard picture frame
Measurement point	1 : Checkpoint array pin (A6) (C0) 2 : Checkpoint array pin (A7) (C1)
Measuring instrument	Oscilloscope
Adjustment address	13 (C 1 GAIN)
Specified value	C1 signal level = C0 signal level

[Adjustment Method]

1) Connect the oscilloscope to the checkpoint array pin (A6) to measure the C0 signal level. (Assume either higher one of the CR or CB signal levels as the C0 signal level.)
2) Connect the oscilloscope to the checkpoint array pin (A7) (measurement of the C1 signal level)
3) Select the adjustment address 13 with the adjustment remote control.
4) Change the adjustment data to coincide the C1 signal level with the C0 signal level measured in 1).
5) Change the adjustment address in order to store the adjustment data.

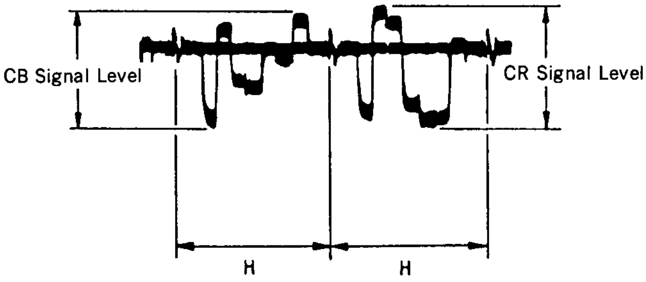


Fig. 8-18.

8-3-12. Chroma Signal Matrix Adjustment (2) (VC-55P Board)

Object	Color bar chart standard picture frame
Measurement point	CH1 (X) : CP-20P board pin ㉔ (B-Y) CH2 (Y) : CP-20P board pin ㉕ (R-Y)
Measuring instrument	Oscilloscope (X-Y mode)
Adjustment address	24 (C 2 GAIN)
Specified value	Each color bright point must coincide. (Refer to the following when the vectorscope is used.)

Note 1 : Similarly adjustable with the vectorscope (vectorscope connection terminal : VIDEO OUT terminal of the video block)

[Adjustment Method]

1) Select the adjustment address 24 with the adjustment remote control.
2) Change the adjustment data to coincide each color bright point divided into two, respectively.
3) Change the adjustment address in order to store the adjustment data.

Specified Values When Vectorscope Is Used

Specified values : Cyan, green ...... Within 2.0 mm
Magenta .... Within 1.0 mm

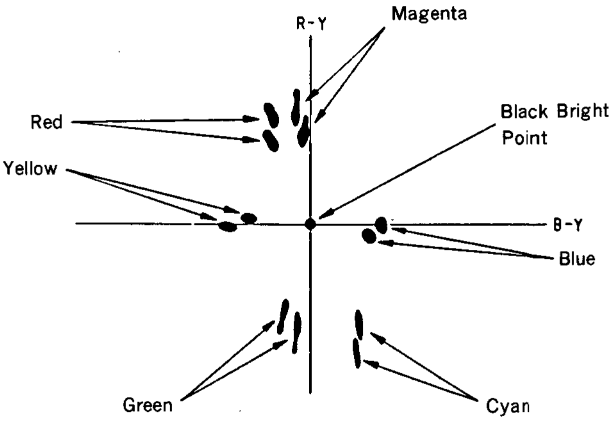


Fig. 8-19.

8-3-13. Y_H Level Adjustment (VC-55P Board)

Object	Color bar chart standard picture frame
Measurement point	Checkpoint pin array (A9) (Y H)
Measuring instrument	Oscilloscope
Adjustment address	23 (Y GAIN)
Specified value	830 ± 20 mV

[Adjustment Method]

1) Select the adjustment address 23 with the adjustment remote control.
2) Change the adjustment data with the adjustment remote control and adjust the Y_H signal level to 830 ± 20 mV.
3) Change the adjustment address in order to store the adjustment data.

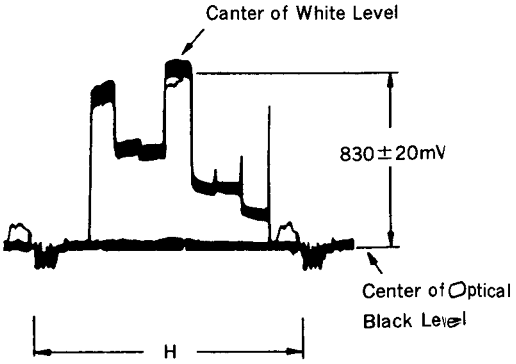


Fig. 8-20.

8-3-14. Chroma Level Adjustment (VC-55P Board)

Object	Color bar chart standard picture frame
Measurement point	Checkpoint array pin (A1) (G OUT)
Measuring instrument	Oscilloscope
Adjustment address	15 (C LEVEL)
Specified value	340±10 mV

[Connection]

1) Connect the checkpoint array pin (B7) (MODE) and GND with a jumper wire.

[Adjustment Method]

1) Select the adjustment address with the adjustment remote control.
2) Change the adjustment data with the adjustment remote control to adjust the G OUT signal level to 340±10 mV.
3) Change the adjustment address in order to store the adjustment data.

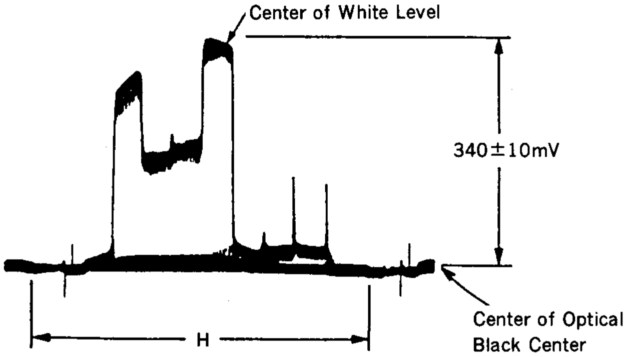


Fig. 8-21.

8-3-15. Sync. Level Adjustment (VC-55P Board)

Object	All black (Cover the lens with a black cap.)
Measurement point	CN301 pin ③ (Y OUT)
Measuring instrument	Oscilloscope
Adjustment address	18 (SYNC LEVEL)
Specified value	300±5mVp-p

[Adjustment Method]

1) Select the adjustment address 18 with the adjustment remote control.
2) Change the adjustment data with the adjustment remote control to adjust the sync. level to 300±5mVp-p.
3) Change the adjustment address in order to store the adjustment data.

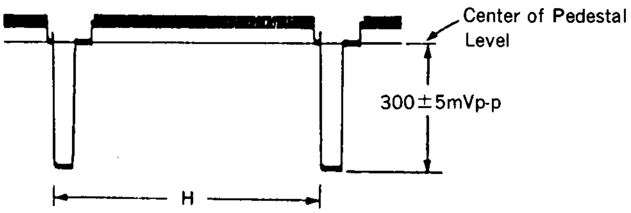


Fig. 8-22.

8-3-16. Setup Adjustment (VC-55P Board)

Object	All black (Cover the lens with a black cap.)
Measurement point	CN301 pin ③ (Y OUT)
Measuring instrument	Oscilloscope
Adjustment address	19 (SET UP)
Specified value	30±10mV

[Adjustment Method]

1) Select the adjustment address 22 (APERTURE) with the adjustment remote control, make note of the adjustment data of this address, and then, set the adjustment data to 00. (step to reduce noises)
2) Select the adjustment address 19 with the adjustment remote control.
3) Change the adjustment data with the adjustment remote control to adjust the setup level to 30±10mV.
4) Select the adjustment address 22 and return the adjustment data to the value written down in the step 1).
5) Change the adjustment address in order to store the adjustment data.

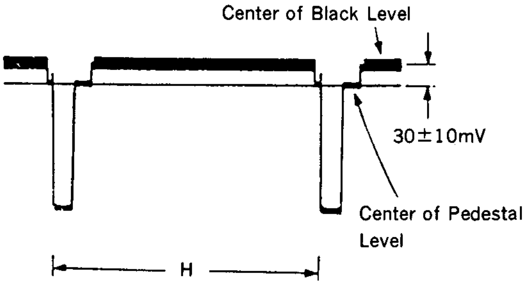


Fig. 8-23.

8-3-17. White Clip Adjustment (VC-55P Board)

Object	High-luminance pattern
Measurement point	CN301 pin ③ (Y OUT)
Measuring instrument	Oscilloscope
Adjustment address	20 (WHITE CLIP)
Specified value	825±20mV

[Adjustment Method]

1) Select the adjustment address 21 (Y LEVEL) with the adjustment remote control and set the adjustment data to 70.
2) Set the adjustment address to 20 with the adjustment remote control.
3) Change the adjustment data with the adjustment remote control to adjust the white clip level to 825±20mV.
4) Change the adjustment address in order to store the adjustment data.
5) Make Y level adjustment as described in 8-3-17.

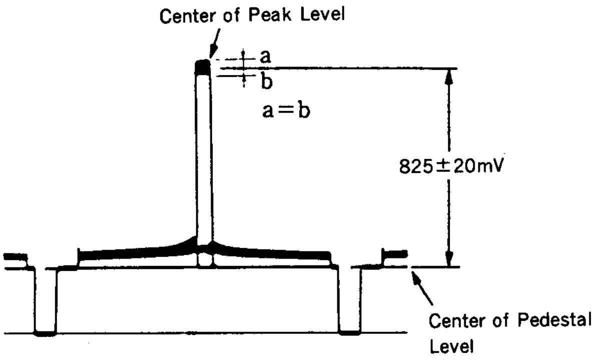


Fig. 8-24.

8-3-18. Y Level Adjustment (VC-55P Board)

Object	Color bar chart standard picture frame
Measurement point	CN301 pin ③ (Y OUT)
Measuring instrument	Oscilloscope
Adjustment address	21 (Y LEVEL)
Specified value	660±20mV

[Adjustment Method]

1) Check that the specified value in "8-3-17 White Clip Adjustment" is met.
2) Select the adjustment address 21 with the adjustment remote control.
3) Change the adjustment data with the adjustment remote control and adjust the Y signal level to 660±20mV.
4) Change the adjustment address in order to store the adjusment data.

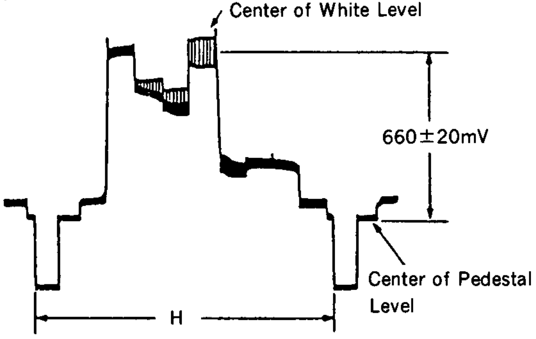


Fig. 8-25.

8-3-19. Aperture Adjustment (VC-55P Board)

Object	Color bar chart standard picture frame
Measurement point	CN301 pin ③ (Y OUT)
Measuring instrument	Oscilloscope
Adjustment address	22 (APERTURE)
Specified value	250±10mV

[Adjustment Method]

1) Turn the focusing ring to maximize the aperture level (waveform peak).
2) Select the adjustment address 22 with the adjustment remote control.
3) Change the adjustment data with the adjustment remote control to set the aperture level (lower peak between "green" and "white") to a point 250±10mV above the pedestal level.
4) Change the adjustment address in order to store the adjustment data.

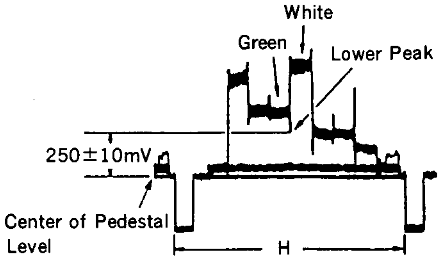


Fig. 8-26.

8-3-20. Max. Gain Adjustment (VC-55P Board)

Object	Color bar chart standard picture frame
Filter	ND filter: 1.0×2pcs., 0.4 and 0.1×1pc. each
Measurement point	CN301 pin ③ (Y OUT)
Measuring instrument	Oscilloscope
Adjustment address	28 (MAX GAIN)
Specified value	340±10mV

[Adjustment Method]

1) Cover the lens with the ND filter 2.5 (1.0+1.0+0.4+0.1).
2) Select the adjustment address 28 with the adjustment remote control.
3) Change the adjustment address with the adjustment remote control to adjust the Y signal level to 340±10mV.
4) Change the adjustment address in order to store the adjustment data.

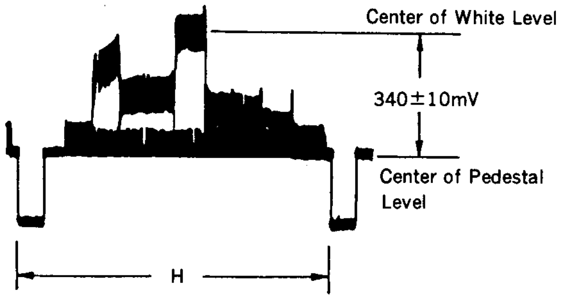


Fig. 8-27.

8-3-21. Burst Level Adjustment (VC-55P Board)

Object	All black (Cover the lens with a black cap.)
Measurement point	CN301 pin ① (C OUT)
Measuring instrument	Oscilloscope
Adjustment address	16 (BURST LEVEL)
Specified value	300±5mVp-p

[Adjustment Method]

1) Select the adjustment address 16 with the adjustment remote control.
2) Change the adjustment data with the adjustment remote control to adjust the burst level to 300±5mVp-p.
3) Change the adjustment address in order to store the adjustment data.

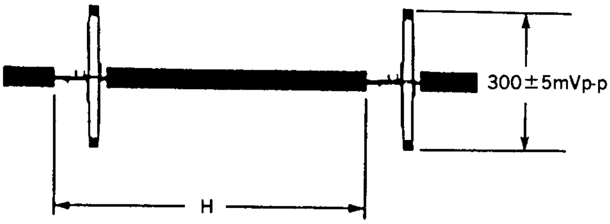


Fig. 8-28.

8-3-22. Brust HUE Adjustment (With Vectorscope)

Object	Color bar chart standard picture frame
Measurement point	VIDEO OUT terminal of the video block
Measuring equipment	Vectorscope
Adjustment address	17 (HUE CONT)
Specified value	135±1°

[Adjustment Method]

1) Select the adjustment address 17 with the adjustment remote control.
2) Change the adjustment data with the adjustment remote control to the burst phase on the vectorscope becomes 135±1°.

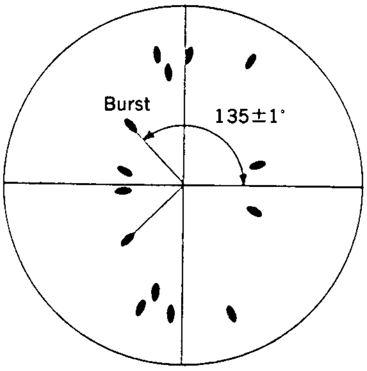


Fig. 8-29.

8-3-23. Pre-white Balance Adjustment (With Vectorscope)

Object	All white pattern
Measurement point	VIDEO OUT terminal of the video block
Measuring instrument	Vectorscope
Adjustment address	11 (R GAIN) 12 (B GAIN)
Specified value	The center of a white bright point must be within a circle of ϕ 1 mm centering around the origin

[Adjustment Method]

1) Select the adjustment address 11 with the adjustment remote control.
2) Change the adjustment data with the adjustment remote control to coincide the white bright point with the origin.
3) Select the adjustment address 12.
4) Change the adjustment data to coincide the white bright point with the origin.
5) Repeat the steps 1) through 4).
6) Change the adjustment address in order to store the adjustment data.

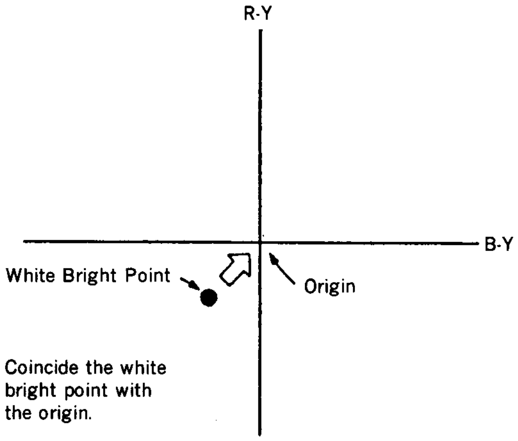


Fig. 8-30.

8-3-24. Pre-white Balance Adjustment (With Oscilloscope) (VC-55P Board)

Object	All white pattern
Measurement point	CN301 pin ① (C OUT)
Measuring instrument	Oscilloscope
Adjustment address	11 (R GAIN) 12 (B GAIN)
Specified value	Chroma signal amplitude minimum

[Adjustment Method]

1) Select the adjustment address 11 with the adjustment remote control.
2) Change the adjustment data with the adjustment remote control to minimize a chroma signal amplitude.
3) Select the adjustment address 12.
4) Change the adjustment data to minimize the chroma signal amplitude.
5) Repeat the steps 1) through 4).
6) Change the adjustment address in order to store the adjustment data.

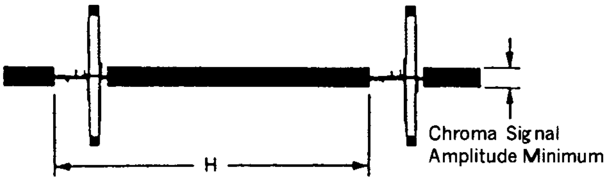


Fig. 8-31.

8-3-25. Color Reproducibility Adjustment (With Vectorscope)

Object	Color bar chart standard picture frame
Measurement point	VIDEO OUT terminal of the video block
Measuring instrument	Vectorscope
Adjustment address	05 (R-Y GAIN) 06 (B-Y GAIN) 07 (R-Y HUE) 08 (B-Y HUE)
Specified value	All color bright points must be within a color reproduction frame.

Note 1 : Burst level adjustment and pre-white balance adjustment must have been completed.

[Adjustment Method]

1) Adjust the PHASE and GAIN controls of the vectorscope to set the burst bright point to the specified position (maked by "▲") on the color reproduction frame.
2) Change the adjustment data of each adjustment address with the adjustment remote control to collect all the color bright points within the color reproduction frame.
3) Change the adjustment address in order to store the adjustment data.

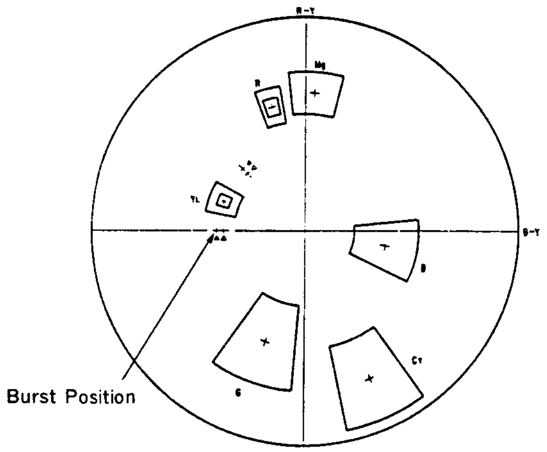


Fig. 8-32(a).

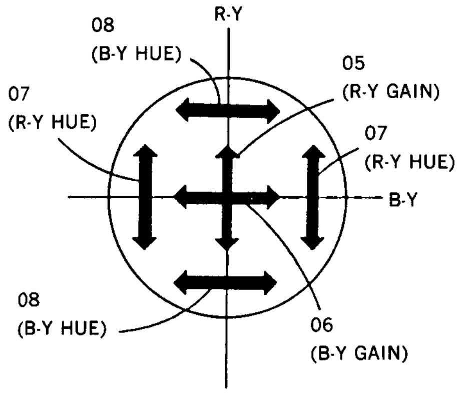


Fig. 8-32(b). Adjustment Addresses and Bright Point Moving Directions

8-3-26. Color Reproducibility Adjustment (With Oscilloscope)

(1) Gain Adjustment (VC-55P Board)

Object	Color bar chart standard picture frame
Measurement point	CN301 pin ① (C OUT)
Measuring instrument	Oscilloscope External trigger : CN301 pin ③ (Y OUT)
Adjustment address	05 (R-Y GAIN) 06 (B-Y GAIN)
Specified value	"Red" level : 592±32mVp-p "Yellow" level : 400±24mVp-p

Note 1 : Pre-white balance adjustment must have been completed.

[Adjustment Method]

1) Select the adjustment address 06 with the adjustment remote control and set the adjustment data to "E0"
2) Set the adjustment address to 07 and the adjustment data to "B0".
3) Set the adjustment address to 08 and the adjustment data to "B0"
4) Set the adjustment addess to 05, and changa the adjustment data to adjust the chroma signal "red" level to 592±32mVp-p.
5) Set the adjustment address to 06, and change the adjustment data to adjust the chroma signal "yellow" level to 400±24mVp-p.
6) Repeat the steps 4) and 5) until both specified values are met.
7) Change the adjustment address in order to store the adjustment data.
8) Make hue adjustment.

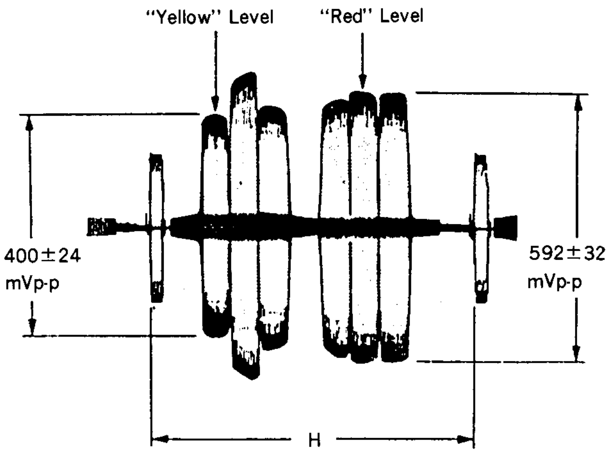


Fig. 8-33.

(2) Hue Adjustment

Object	Color bar chart standard picture frame
Measurement point	CH1 (X) : CP-20P board pin ㉔ CH2 (Y) : CP-20P board pin ㉕
Measuring instrument	Oscilloscope (X-Y mode)
Adjustment address	07 (R-Y HUE) 08 (B-Y HUE)
Specified value	Each color bright point must be within the color reproduction frame.

Note 1 : Pre-white balance adjustment must have been completed.

[Adjustment Method]

1) Coincide the "black" bright point on the oscilloscope with the origin of the color reproduction frame.
2) Change the adjustment data of the adjustment addresses 07 and 08 with the adjustment remote control to collect each color bright point within the color reproduction frame.
3) Confirm the hue reproduced on the monitor TV screen, and finely adjust the adjustment data of the adjustment addresses 07 and 08, if necessary.
4) Change the adjustment address in order to store the adjustment data.

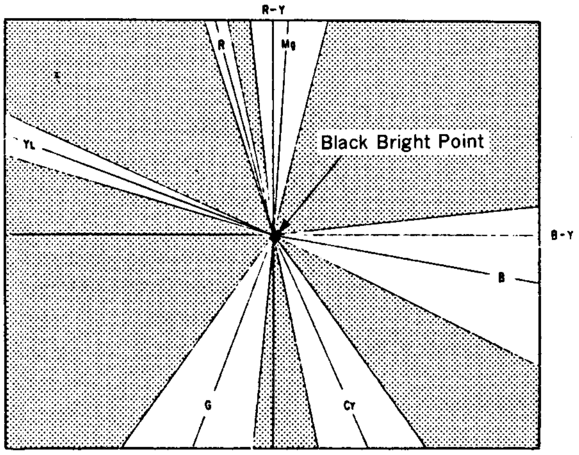


Fig. 8-34.

8-3-27. Auto White Balance Adjustment

Note 1 : Be sure to make "preset adjustment" and "auto white balance adjustment" in that order.

(1) Preset Adjustment (VC-55P Board)

Object	All white pattern

Note 1 : Make preset adjustment 30 seconds or more after turning on the power.

Note 2 : When redoing preset adjustment, turn off the power once, and then, turn it on again.

Preparation : Prepare to connect the checkpoint array pin (B5) (AWB ADJ) and W302 pin ⑧ (SS 5V) with a jumper wire.

[Adjustment Method]

1) Turn off/on the power.
2) Check that the EVR ADJ mode is normal. (pin (B6) (CAM ADJ) open)
3) Connect the checkpoint array pin (B6) (CAM ADJ) and GND with a jumper wire.
4) Connect the checkpoint array pin (B5) (AWB ADJ) and W302 pin ⑧ (SS 5V) with a jumper wire.
5) Select the adjustment address 89 (AWB MODE) with the adjustment remote control and set the adjustment data to E0. Wait for 5 seconds or more.
6) Change the adjustment address in order to store the adjustment data. Wait for 5 seconds or more.
7) Remove the jumper wire from the checkpoint array pin (B5) (AWB ADJ).
8) Make auto white balance adjustment.

(2) Auto White Balance Adjustment (VC-55P Board)

Note 1 : Be sure to make this adjustment after preset adjustment.

Object	All white pattern
Filter	Color temperature compensation filter C14
Measuring instrument	Oscilloscope (X-Y mode) Note 1
Measurement point	CH1 (X) : CP-20P board pin ㉔ (B-Y) CH2 (Y) : CP-20P board pin ㉕ (R-Y)
Adjustment address	01 (DELTA R) 02 (DELTA B) 80 (R OUTDOOR) 81 (B OUTDOOR) 76 (R DWN LMT) 78 (R OUT LMT) 77 (B UP LMT) 79 (B OUT LMT) 80 (R OUT DOOR) 81 (B OUT DOOR) 89 (AWB MODE)
Specified value	The white and black bright points must coincide.

Note 1 : Also adjustable with the vectorscope. When using the vectorscope, connect it to the VIDEO OUT terminal of the video block.

Note 2 : All calculation in the text are calculated in decimal numbers.

[Adjustment Method]

1) Select the adjustment address 89 (AWB MODE) with the adjustment remote control and enter the adjustment data 10.
2) Cover the lens with the C14 filter.
3) Change the adjustment data of the adjustment addresses 01 and 02 with the adjustment remote control to coincide the white and black bright points. (when the vectorscope is used, coincide the white bright point with the origin.)
   At this time, assume the data of the adjustment address 01 asC_1 and that of the adjustment address 02 as C_2.
4) Convert C_1 into a decimal number to assume it as C_1', and C_2 as well as C_2'. (Refer to Table 8-5 "Hexadecimal-Decimal Conversion Table")
5) Obtain D_{76}' by the following formula.
   $D_{76}'=C_1'-10$
6) Convert D_{76}' into a hexadecimal number and assume its value as D_{76}. (Round fractions below a decimal number to the nearest whole number)
7) Select the adjustment address 76 and enter the adjustment data D_{76}.
   Select the adjustment address 78 and enter the adjustment dataC_1.
8) Obtain D_{77}' by the following formula.
   $D_{77}'=(C_2'-48)\div 1.8+48$
   $D_{79}'=C_2'+6$
9) Convert D_{77}' and D_{79}' into hexadecimal numbers and assume their values as D_{77} and D_{79}' respectively.
10) With the adjustment remote control, enter D_{77} and D_{79} to the adjustment addresses 77 and 79, respectively.
11) Obtain D_{80}' and D_{81}' by the following formulas.
    $D_{80}'=C_1'+1$
    $D_{81}'=C_2'+3$
12) Convert $D_{80}'$and D_{81}' into hexadecimal numbers and assume their values as D_{80} and D_{81}, respectively. (Round fractions below a decimal point to the nearest whole number)
13) Select the adjustment address 80 and enter the adjustment data D_{80}. Select the adjustment address 81 and enter the adjustment data D_{81}. (outdoor white balance adjustment)
14) Select the adjustment address 89 and enter the adjustment data F0.
15) Change the adjustment addresses 01 and 02 with the adjustment remote control to coincide the white and black bright points.
    (When the vectorscope is used, coincide the white bright point with the origin.)
16) Select the adjustment address 89 and enter the adjustment data 00.
17) Change the adjustment address in order to store the adjustment data.

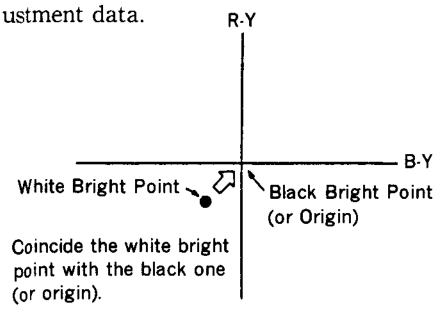

R-Y
B-Y
White Bright Point
Black Bright Point
(or Origin)
Coincide the white bright point with the black one (or origin).

Fig. 8-35.

8-3-28. Outdoor White Balance Check

Object	White pattern standard picture frame
Filter	Color temperature compensation filter C14
Measurement point	When the vectorscope is used ; VIDEO OUT terminal of the video block When the oscilloscope (X-Y mode) is used ; CH1 (X) : VC-55P board CP-20P pin ㉔ (B-Y) CH2 (Y) : VC-55P board CP-20P pin ㉕ (R-Y)
Measuring instrument	
Specified value	Refer to Fig 8-36

[Connection Method]

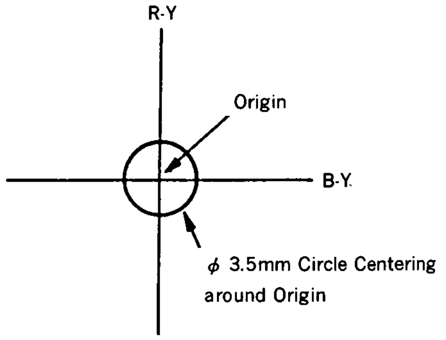
1) Remove the jumper wire from the checkpoint array pin (B6) (CAM ADJ). (Turn off the EVR adjustment mode)

[Check Method]

1) Press the White Balance button to select the outdoor white balance mode. (A mark " ☼ " appears on the EVF screen or monitor screen (when the data screen is turned on)).
2) Check that the center of the white bright point is within the circumference shown in Fig. 8-36.

Note : When using the vectorscope, adjust in advance the GAIN and PHASE controls of the vectorscope so that the burst bright point will coincide with the burst position (marked by "Δ") of the color reproduction frame.

For the Vectorscope



For the Oscilloscope

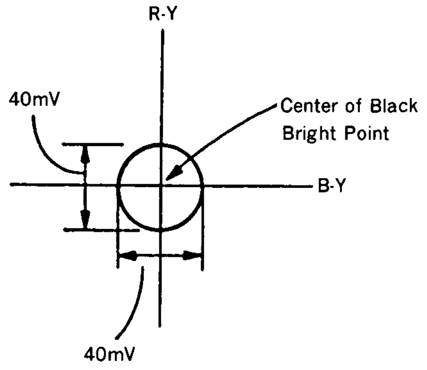


Fig. 8-36.

8-3-29. Focus Motor Speed Adjustment (AF-47P Board)

Object	Optional
Measurement point	CN455
Measuring instrument	AF microcomputer data reader jig
Adjustment address	26 (FOCUS SPEED)
Specified value	Average value of jig indicated data =8± 0.5

Reference : A rotation time is about 2.5 seconds from the focusing ring short distance end to long distance end after completing adjustment.

[Adjustment Method]

1) Press the FOCUS button (FD-10P board S109) to turn on auto focus.
2) Select the adjustment address 37 with the adjustment remote control and enter adjustment data 01. (setting of the hunting mode)
3) Set the adjustment address to 26.
4) Change the adjustment data so that the AF microcomputer data reader jig indicates 08 while the focusing ring is rotating.
5) While the focusing ring is rotating, press the HOLD button of the AF microcomputer data reader jig to read an indicated value.
6) Repeat the step 5) 10 times and obtain an average value. Specified value=9.0±0.5
   When the specified value is not met, repeat the steps 3) and 4).
7) Set the adjustment address to 37 and the adjustment data to 00. (cancellation of the hunting mode)
8) Change the adjustment address in order to store the adjustment data.

8-3-30. Macro Area Adjustment (AF-47P Board)

Object	Optional
Measurement point	CN455
Measuring instrument	AF microcomputer data reader jig
Adjustment address	39 (MACRO)
Specified value	Value at the zoom ring WIDE end

[Adjustment Method]

1) Set the zoom ring at the WIDE end (11 mm side).
2) Select the adjustment address 37 with the adjustment remote control and set the adjustment data to 03. (setting of the zooming position display mode)
3) Read the data displayed by the AF microcomputer data reader jig. (If normal, data 02-0F is dispalyed.)
4) Change the adjustment address to 39.
5) Enter the data read from the jig as adjustment data.
6) Change the adjustment address to 37 and set the adjustment data to 00. (cancellation of the zoom position display mode)
7) Change the adjustment address in order to store the adjustment data.

8-3-31. Auto Focus LLA Adjustment (AF-47P Board)

Object	All black (Cover the lens with a black cap)
Measurement point	CN455
Measuring instrument	AF microcomputer data reader jig
Adjustment address	38 (LLA)
Specified value	(Jig indicated value) −2

[Adjustment Method]

1) Select the adjustment address 37 with adjustment romote control and set the adjustment data 0B. (setting of the auto focus LLA adjustment mode)
2) Read the data displayed by the AF microcomputer data reader jig and assume this value as D.
3) Assume a value of D-2 as LLA data. (Refer to Table 8-5 "Hexadecimal-Decimal Conversion Table")
   Example : When D=30 (48), LLA data is 2E (46).
   Example : When D=31 (49), LLA data is 2F (47).
   * Decimal converted values in parentheses
4) Select the adjustment address 38 with the adjustment remote control and enter LLA data as adjustment data.
5) Select the adjustment address 37 and set the adjustment data to 00. (cancellation of the auto focus LLA adjustment mode)
6) Change the adjustment address in order to store the adjustment data.

8-3-32. Auto Focus Adjustment

(1) Preparation for AF Data Entry (AF-47P Board)

Object	All black (Cover the lens with a black cap), all white pattern
Measurement point	CN455
Measuring instrument	AF microcomputer data reader jig (AF jig)
Adjustment address	45 (FH B) 44 (FA B) 55 (AGC B) 52 (FH W)
Specified value	FH B≦1C FA B≦1C FH W≦0F FA W≦0F

[Adjustment Method]

1) Turn off auto focus with the FOCUS button (FD-10P board S109).
2) Cover the lens with a black cap.
3) Select the adjustment address 37 with the adjustment remote control and set the adjustment data to FF.
4) Read the AF microcomputer data reader jig and enter this data (FH B) to the adjustment address 45. (FH B should be 00 to 1C.)
5) Select the adjustment address 37 and set the adjustment data to FD.
6) Read the AF microcomputer data reader jig and enter this data to the adjustment address 44. (FA B should be 00 to 1C.)
7) Select the adjustment address 37 and set the adjustment data 0B.
8) Read the AF microcomputer data reader jig and enter this data (AGC B) to the adjustment address 55.
9) Remove the black cap from the lens and pick up an image with a white pattern (pattern box).
   (When this is done, check that the white diffusion plate for the pattern box is not dirty.)
10) Select the adjustment address 37 and set the adjustment data to FF.
11) Read the AF microcomputer data reader jig and enter this data (FH W) to the adjustment address 52. (FH W should be 00 to 0F.)
12) Select the adjustment address 37 and set the adjustment data to FD.
13) Read the AF microcomputer data reader jig and check this data (FA W). (FA W should be 00 to 0F.)
14) Select the adjustment address 37 and set the adjustment data 0B.
15) Read the AF microcomputer data reader jig and enter this data (AGC W) to the adjustment address 54.
16) Change the adjustment address in order to store the adjustment data.

(2) Auto Focus Adjustment (AF-47P Board)

Object	Siemens star (1.5m in front of the lens datum level (marked by "Φ")
Measurement point	CN455
Measuring instrument	AF microcomputer data reader jig (AF jig)
Adjustment address	43 (FH SM) 47 (GETA H) 50 (KATAMUKI) 42 (FA SM) 41 (LOW CONT) 49 (STEP)
Specified value	10≦FH SM≦40 40≦FA SM≦80

[Measurement Methed]

1) Place the Siemens star at a distance of 1.5m in front of the lens datum level (refer to Fig. 8-2).
2) Shift the zoom lever to the TELE end (88mm) and turn off auto focus with the FOCUS button (FD-10P board S109).
3) Adjust a camera block position to center the Siemens star on the monitor screen with the monitor screen.
4) Cover the lens with the ND filter 1.4 (1.0+0.4).
5) Set the focusing ring at the short distance end (1.3m), pick up an image of the Siemens star with the standard picture frame, and turn on auto focus with the FOCUS button.
6) After 2.5 seconds, check that the image of the Siemens star is clearly picked up, and then, press the FOCUS button to turn off auto focus. (AF microcomputer data M should be 5.)
7) With the adjustment remote control, select the adjustment address 37 and enter the adjustment data FF. (The auto focus filter is fixed at the FH side.)
8) Read the AF jig. Convert this data D into a decimal number and assume it as D′. Obtain FH SM′ by the following formula.
   FH SM′ =D′/2.5
   Convert FH SM′ into a hexadecimal number and obtain FH SM.
   (Round fractions below a decimal point to the nearest whole number. FH SM should be 10 to 40.)
9) Enter FH SM to the adjustment address 43.
10) With the adjustment remote control, select the adjustment address 37 and enter the adjustment data FD. (The auto focus filter is fixed at the FA side.)
11) Read the AF jig, convert this data D into a decimal number and assume it as D′. Obtain FA SM′ by the following formula.
    FA SM″=D′/1.6
    Convert FA SM′ into a hexadecimal number to obtain FA SM.
    (Round fractions below a decimal point to the nearest whole number. FA SM should be 40 to 80.)

12) Enter FA SM to the adjustment address 42.
13) Select the adjustment address 47 and enter the following adjustment data. GETA H=FH B+2
(FH B is the data of the adjustment address 45)
14) Select the adjustment address 41 and enter the following adjustment data. LOW CONT=FA B+3
(FA B is the data of the adjustment address 44)
15) Convert hexadecimal numbers FA SM, FH SM and FH B into decimal numbers and assume their values as FA SM', FH SM' and FH B', respectively.
Obtain STEP by the following formula.

$$k'=\frac{\text{FA SM}'-32}{\text{FH SM}'-\text{FH B}'-4}$$

Obtain entry data out of the table below, depending on a value of k'.

	$k'\leqq 4$	$4<K'\leqq 8$	$8<k'$
Entry data	02	03	04

16) Select the adjustment address 49 and enter the data obtained in 18).
17) Obtain KATAMUKI (TILT) by the following formula. (FA SM', FH SM' and FH B' are the same as those above)

$$k'=\frac{\text{FA SM}'-32}{\text{FH SM}'-\text{FH B}'-4}$$

Obtain entry data out of the table below, depending on a value of k'.

	$k''\leqq 2$	$2<k''\leqq 4$	$4<k''\leqq 8$	$8\leqq k''$
Entry data	06	04	02	01

18) Select the adjustment address 50 and enter the data obtained in the step 20).
19) Select the adjustment address 37 and set the data to 00.
20) Change the adjustment address in order to store the adjustment data.

8-3-33. Auto Focus Check

Object	Siemens star (at a distance of 1.5m in front of the lens datum level (marked by "Φ"))

Note 1 : Connect the EVF (Electronic View Finder) to make adjustment.

[Measurement Methed]

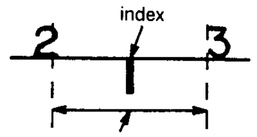
1) Place the Siemens star at a distance of 1.5m in front of 1.5m in front of the lens datum level (refer to Fig.8-2).
2) Shift the zoom lever to the TELE end (88mm).
3) Adjust a camera block position to center the Siemens star on the monitor screen with the monitor screen.
4) Open the iris with the IRIS knob (FD-10P board RV101). When this is done, adjust the illumination for the Siemens star or cover the lens with the ND filter so that the clearest image can be obtained on the monitor TV screen.
5) Turn off auto focus with the FOCUS button (FD-10P board S109).
6) Turn the focusing ring as far as the short distance end (1.3m).
7) Press the PUSH AUTO button (FD-10P board S114).
8) After 5 seconds, check that a clear image can be obtained and AF microcomputer data M can be 5.
9) Turn off auto focus and turn the focusing ring as far as the long distance end (∞).
10) Press the PUSH AUTO button.
11) After 3.5 seconds, check that a clear image can be obtained.

8-3-34. AF-Zooming Check

Object	Siemens star (at a distance of 1.5m in front of the lens datum level (marked by "Φ"))
Measurement point	Lens focusing ring and zoom ring
Specified value	Focus ring can be stopped between 2 to 3 within 2.5 seconds. (See Fig-Ⓐ)

[Check Method]

1) Turn off auto focus and turn the focusing ring as far as the long distance end (∞).
2) At a WIDE end, following turn on auto focas switch, focus ring can be stopped between 2 to 3 (See Fig-Ⓐ) within 2.5 seconds.
3) Turn off auto focus and turn the focusing ring as far as the long distance end (Near).
4) Repeat step 2).



The focusring should stop within this range.

Fig. Ⓐ

8-4. Adjustment of Digital Titler System

8-4-1. Titler Control PLL Adjustment (FD-10P Board)

Object	Optional
Measurement point	⊕ side of C165 (refer to Fig. 8-38)
Measuring instrument	Digital voltmeter
Adjustment element	CT161
Specified value	2.5±0.1Vdc

[Connection]

1) Connect the IC161 pin (64) ($\overline{\text{LCLR}}$; refer to Fig, 8-37) of R188 and W101 pin ⑬ (SS 5V) with a jumper wire.

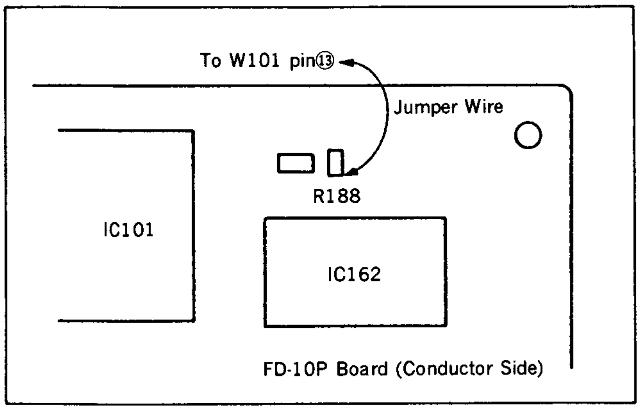

To W101 pin⑬
Jumper Wire
R188
IC101
IC162
FD-10P Board (Conductor Side)

Fig. 8-37.

[Adjustment Method]

1) Adjust to 2.5 ±0.1V DC with CT161.

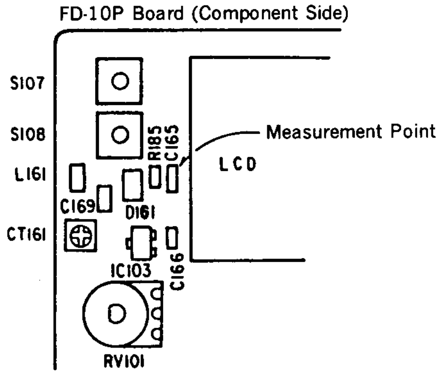

FD-10P Board (Component Side)
S107
S108
L161
CT161
R185
C165
Measurement Point
LCD
C169
D161
IC103
C166
RV101

Fig. 8-38.

8-4-2. Title A/D Level Adjustment

Object	Color bar chart standard picture frame
Measurement point	Check at the monitor TV screen.
Measuring instrument	
Adjustment address	09 (TITLE A/D)
Specified value	"Blue" and "black" portions are must be superimposed (to be whitened). The other portions must not change.

Note 1 :Y Level adjustment must have been completed.

[Adjustment Method]

1) Press TITLE 1 (FD-10P board S101) to display "T1 WHT" on the EVF or data screen.
2) Select the adjustment address 09 with the adjustment remote control.
3) Press the MEMORY button (FD-10P board S103).
4) Check that the "blue" and "black" portions must be superimposed to be whitened, and that the "red" and "magenta" portions do not change.
5) When specifications are not met, change the adjustment data with the adjustment remote control and repeat the steps 3) and 4).
6) Change the adjustment address in order to store the adjustment data.

An oblique line area must be changed to white.

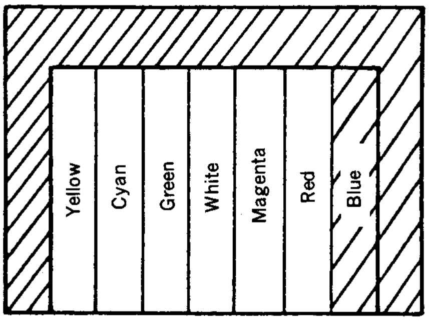

Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. 8-39.

8-4-3. Title Pedestal Adjustment (VC-55P Board)

Object	All black (Cover the lens with a black cap)
Measurement point	CN301 pin ① (C OUT)
Measuring instrument	Oscilloscope
Adjustment address	03 (PED)
Specified value	4.43MHz chroma components minimum

[Adjustment Methed]

1) Press TITLE 1 (FD-10P board S101).
2) Turn on the data screen with the DATA SCREEN button (FK-15 board S080) and check that "T1 WHT" appears on the monitor screen.
   (If the other color is displayed, press the COLOR button (FD-10P board S104) to display "T1 WHT".)
3) Cover the lens with a black cap and press the MEMORY button (FD-10P board S103).
4) Select the adjustment address 03 with the adjustment remote control.
5) Change the adjustment data with the adjustment remote control to minimize 4.43MHz chroma components.
6) Change the adjustment address in order to store the adjustment data.

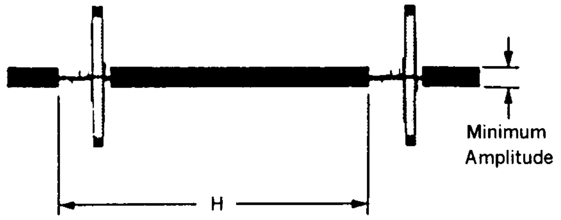


Fig. 8-40.

8-4-4. Title Y Level Adjustment (VC-55P Board)

Object	All black (Cover the lens with a black cap)
Measurement point	CN301 pin ③ (Y OUT)
Measuring instrument	Oscilloscope
Adjustment address	10 (CHARACTER)
Specified value	500±10mV

[Adjustment Methed]

1) Press TITLE 1 button (FD-10P board S101).
2) Turn on the data screen with the DATA SCREEN button (FK-15 board S080) and check that "T1 WHT" appears on the monitor screen.
3) Cover the lens with a black cap and press the MEMORY button (FD-10P board S103).
4) Select the adjustment address 10 with the adjustment remote control.
5) Change the adjustment data with the adjustment remote control to adjust the Y signal level to 500±10mV.
6) Change the adjustment address in order to store the adjustment data.

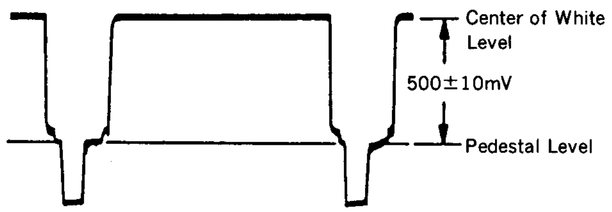
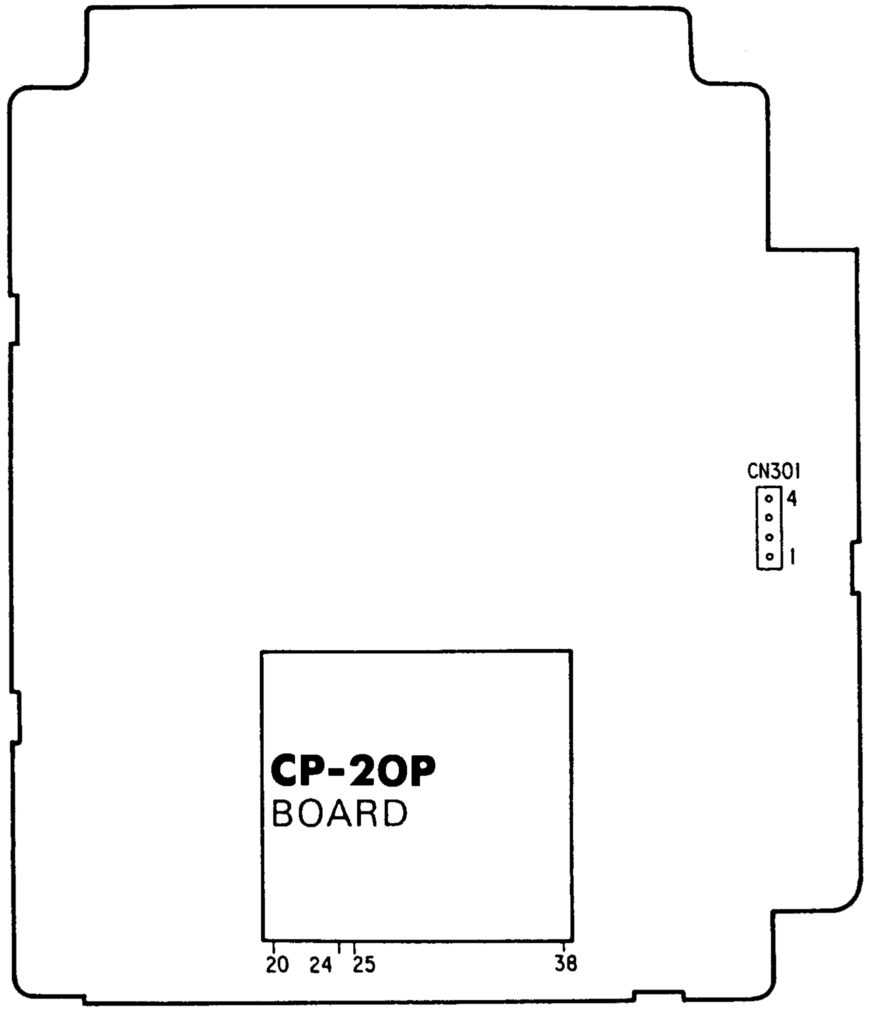


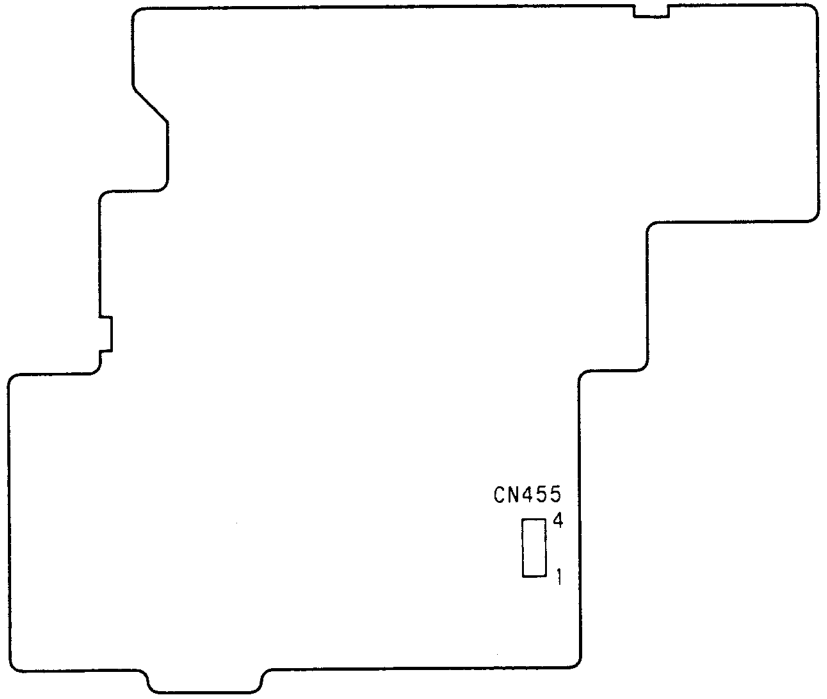
Fig. 8-41.

8-5. ADJUSTMENT PART LOCATION DIAGRAM

VC-55P BOARD (Component Side)



AF-47P BOARD (Component Side)



ard)

a black

SCREEN
1 WHT"

EMORY

justment

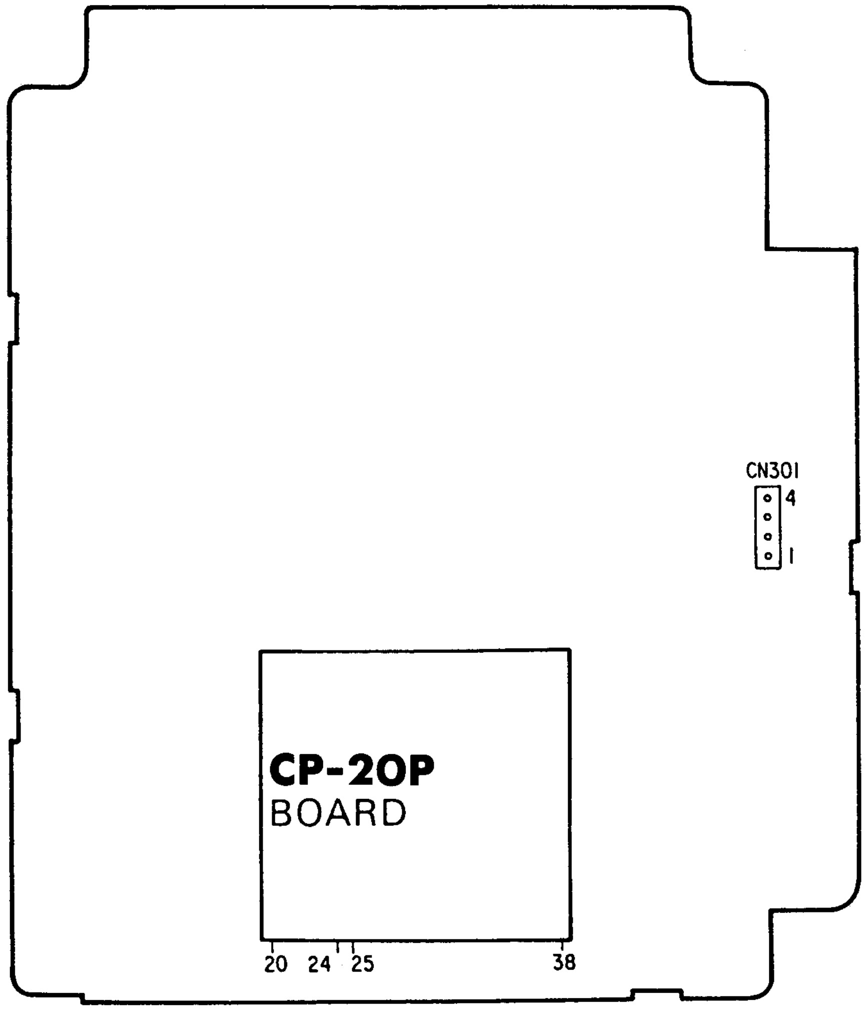
t remote
mV.
store the

of White

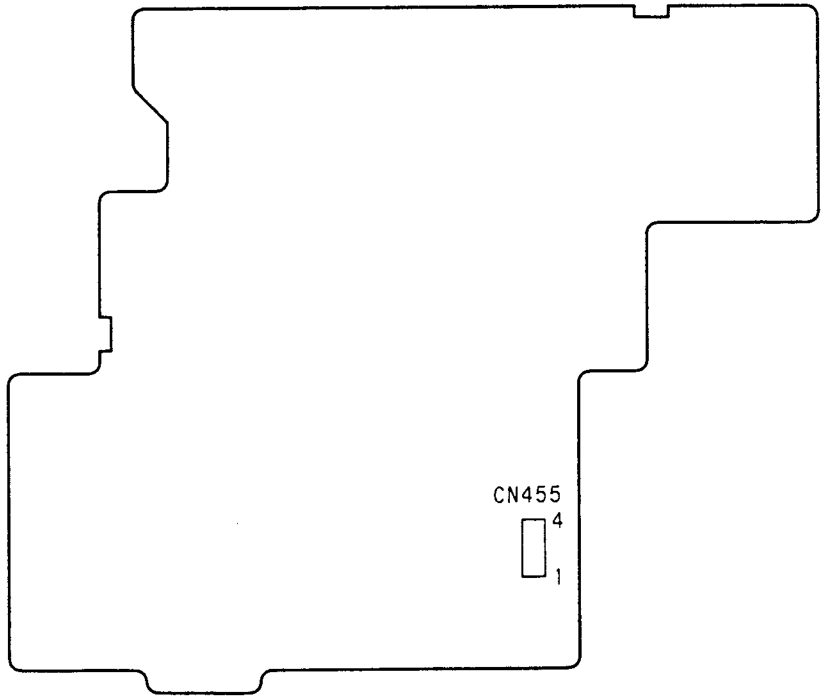
tal Level

8-5. ADJUSTMENT PART LOCATION DIAGRAM

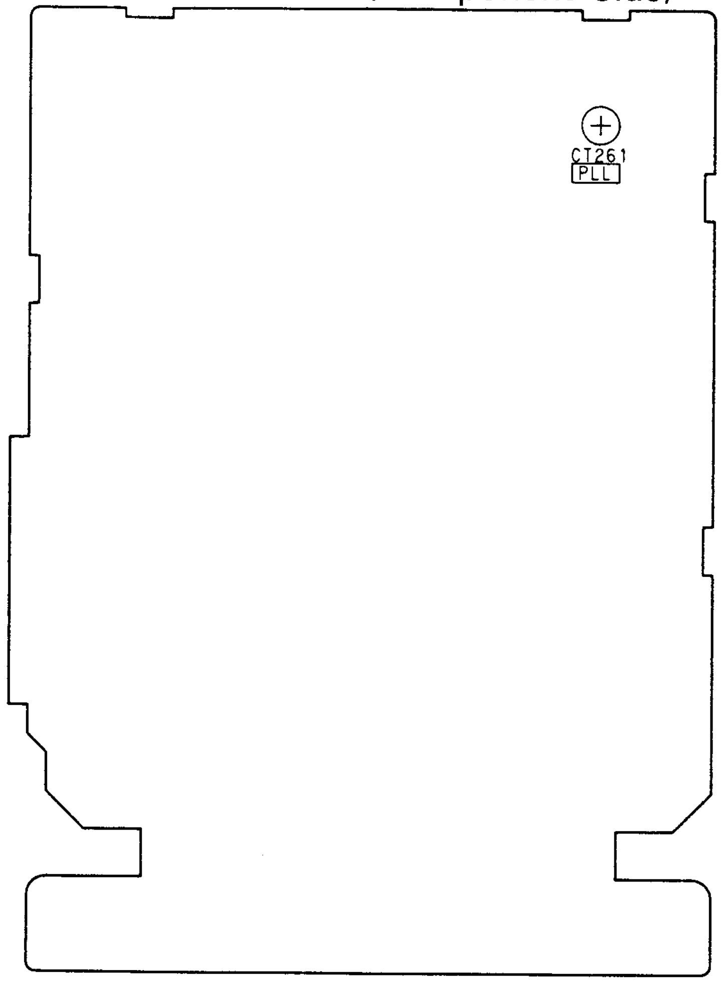
VC-55P BOARD (Component Side)


CN301
4
1
CP-20P
BOARD
20
24
25
38

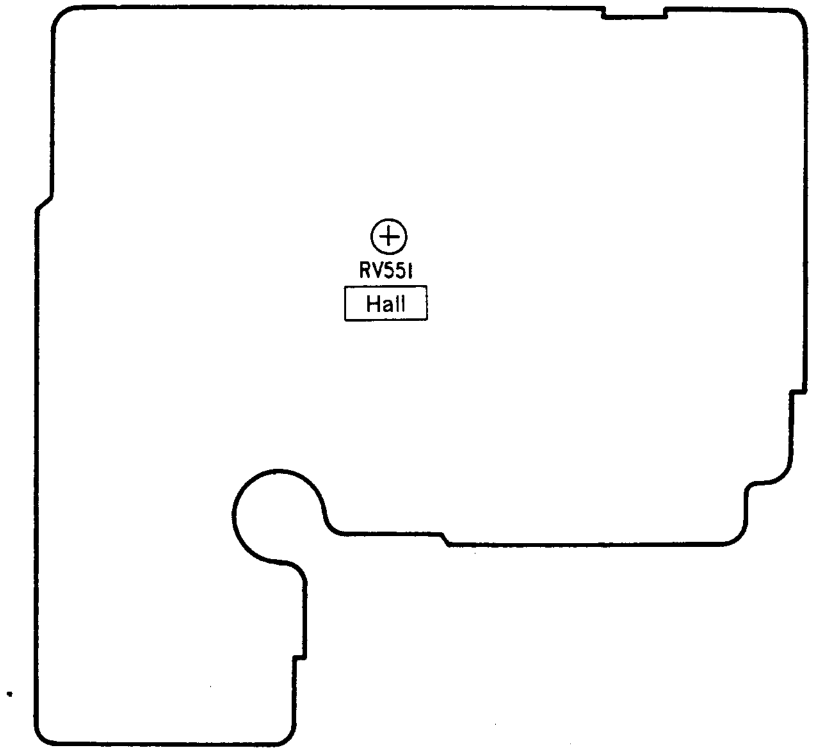
AF-47P BOARD (Component Side)



VC-54P BOARD (Component Side)



DM-23P BOARD (Conductor Side)



SECTION 9
ELECTRICAL ADJUSTMENT OF VIDEO BLOCK

See the adjusting part location diagram from on page 260 for the adjustment

The following measuring instruments are used for adjustment of the VTR block.

[Measuring Instruments Used]

1) Monitor TV
2) Dual-trace oscilloscope, band width of 10MHz or more, with delay mode (use a probe 10 : 1, unless otherwise specified)
3) Frequency counter
4) Pattern generator (with video output terminal ; refer to 9-1-1 "Equipment Connection")
5) Digital voltmeter
6) Audio generator
7) Auido level meter
8) Audio distortion meter
9) Audio attenuator
10) Stabilized power supply
11) Alignment tape

    For tracking adjustment

    (WR5-1CP) Part No. : 8-967-995-07

    For video frequency characteristic adjustment

    (WR5-7CE) Part No. : 8-967-995-18

    For L mode operation check

    For SP (WR5-5CSP) Part No. : 8-967-995-46

    (WR5-4CSP) Part No. : 8-967-995-47

    For LP (WR5-4CL) Part No. : 8-967-995-56

    For E mode operation check (ME tape)

    For SP (WR5-8CSE) Part No. : 8-967-995-48

    For LP (WR5-8CLE) Part No. : 8-967-995-57
12) Extension cables
    1. 1.25mm-pitch 7-pin flat extension cable between the DC-DC converter CN011 and FD-10P board W101 ; Part No. : J-6082-033-A
    2. 1.25mm-pitch 8-pin flat extension cable between the DC-DC converter CN010 and SS-88P board W005 ; Part No. : J-6082-032-A
    3. 1mm-pitch 20-pin flat extension cable between the FD-10P board W901 and VI-71 board CN403 ; Part No. : J-6082-031-A
    4. 1mm-pitch 11-pin flat cable between the FD-10P board CN101 and SS-88P board W002 ; Part No. : J-6082-013-A

[Precautions for Adjustment]

Except "battery down adjustment" of system control system adjustment, the video block can be also adjusted with the camera block removed. When removing the camera block, disconnect the following 5 connectors.

The DC-DC converter must be connected to the VTR block. Use the extension cables mentioned in [Measuring Instruments Used] , item 12) as required.

1. DC-DC converter CN013
2. FD-10P board CN161
3. VC-55P board CN301
4. AF-47P board CN454
5. DM-23P board CN550

The index block (MK-5 board) is required only for index system adjustment. When removing the index block, disconnect the following connectors of the MK-5 board.

1. CN001
2. CN002

The EVF (Electronic View Finder) block is not required for video block adjustment. When removing the EVF block, disconnect the following connectors.

1. FD-10P board CN903

The microphone board (MC-31P board) is not required for video block adjustment. When removing the microphone board, disconnect the following connectors.

1. MC-31P board CN702
2. MC-31P board CN703

Set the following switch as follows :

1. hi8 (L/E mode selector) switch (PJ-21P board S902) . . . .AUTO (E mode)

9-1. PREPARATION

9-1-1. Equipment Connection

Connect the measuring instruments as shown in Fig. 9-1 in accordance with indication of an input terminal (S VIDEO or VIDEO), and shift the CAMERA/VTR switch (FC-20P board S095) to VTR to make adjustment. The input terminal is specified in parentheses at the signal blank. When not specified, either input terminal may be used. The S VIDEO IN terminal has priority. When making adjustment with VIDEO IN terminal input, pull out a connector from the S VIDEO IN terminal.

Note 1 : When VIDEO input is used for adjustment where S VIDEO input is specified, the specifications of this equipment may not be satisfied. Be sure to follow instructions.

Note 2 : When adjustment is made using the Y/C Separation JIG or VTR with S video output terminal as a signal source, the performance of this equipment is affected by that VTR. Use the pattern generator with Y/C separator output terminal as much as possible.

Note 3 : When the equipment is not provided with the input terminal, input with the connection as shown in Fig. A. In this case, perform the connection of the REC mode and the E-E mode with the CAM REC mode and the CAM STANDBY mode.

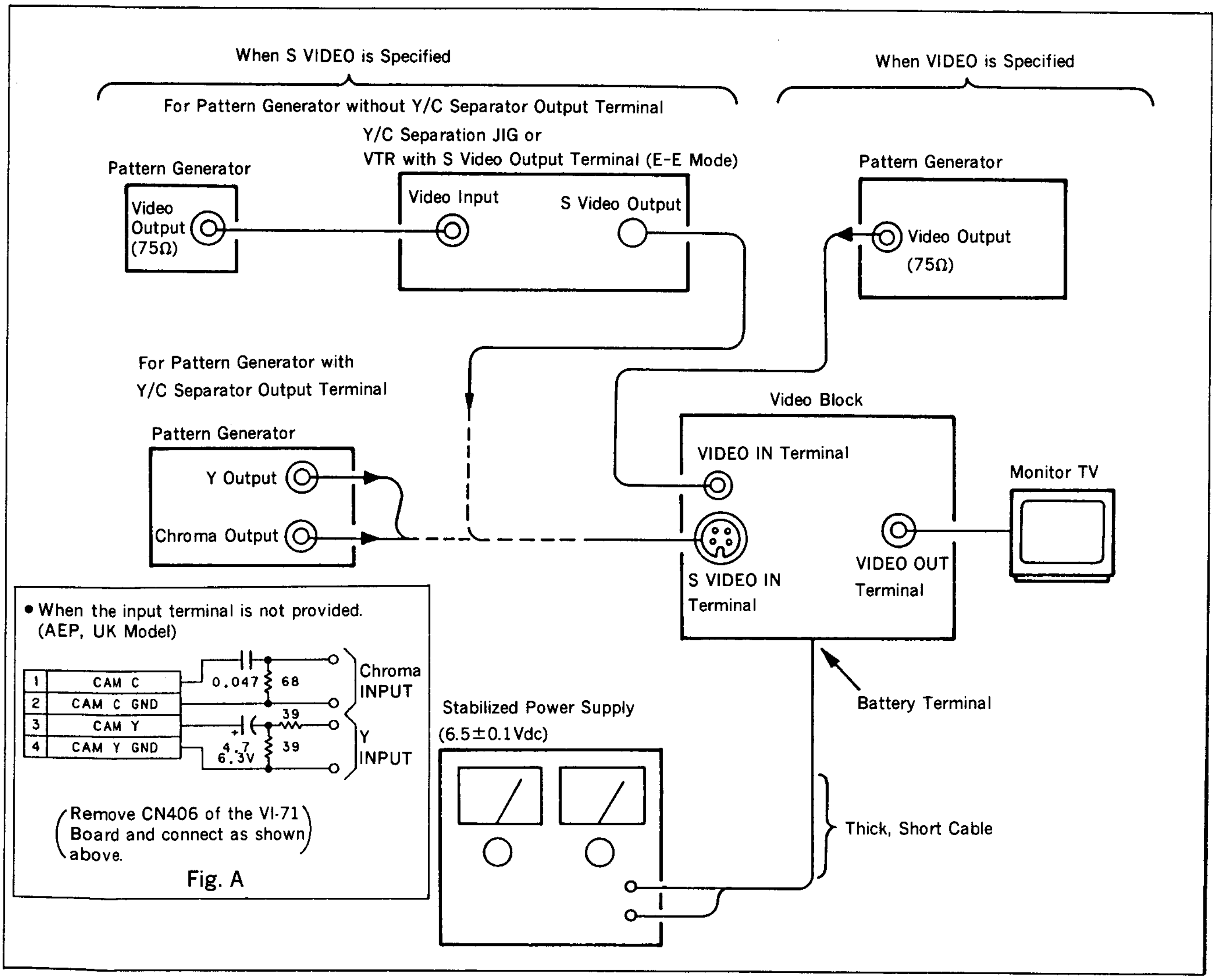
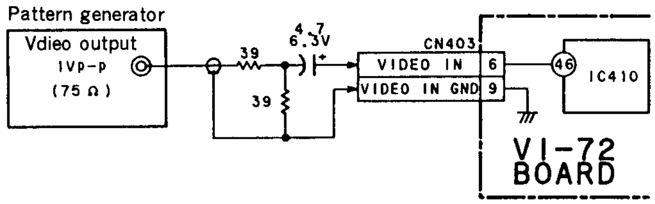

When S VIDEO is Specified
For Pattern Generator without Y/C Separator Output Terminal
Pattern Generator
Video Output (75Ω)
Y/C Separation JIG or VTR with S Video Output Terminal (E-E Mode)
Video Input
S Video Output
When VIDEO is Specified
Pattern Generator
Video Output (75Ω)
For Pattern Generator with Y/C Separator Output Terminal
Pattern Generator
Y Output
Chroma Output
Video Block
VIDEO IN Terminal
S VIDEO IN Terminal
VIDEO OUT Terminal
Monitor TV
• When the input terminal is not provided. (AEP, UK Model)
1 CAM C
2 CAM C GND
3 CAM Y
4 CAM Y GND
0.047
68
39
4.7 6.3V
39
Chroma INPUT
Y INPUT
(Remove CN406 of the VI-71 Board and connect as shown above.)
Fig. A
Battery Terminal
Stabilized Power Supply (6.5±0.1Vdc)
Thick, Short Cable

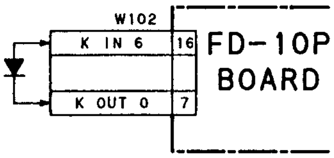
Fig. 9-1

- Video signal input for model not provided with extevnel input terminals.


Pattern generator
Vdieo output
1Vp-p
(75 Ω)
39
39
4.7
6.3V
CN403
VIDEO IN
6
VIDEO IN GND
9
46
IC410
VI-72
BOARD

1) Connect Q644 base and GND with a jumper on the VI-72 board.
2) Connect Q613 base and emitter with a jumper on the VI-72 board.

- Setting the REC mode in models without external input terminals.
  1. Connect Pins ⑦ and ⑯ of the FD-10P board with a diode (1SS119. etc) until the unit enters the REC mode.


W102
K IN 6
16
K OUT 0
7
FD-10P
BOARD

9-1-2. Input Signal Check

Video signals from the pattern generator are used as adjustment signals for adjustment of the VTR block. These video output signals should be within the required standard.

1) For S VIDEO input

Connect an oscilloscope to the Y signal terminal of the S VIDEO IN terminal (PJ-21P board J901) and check that a Y signal sync. signal has an amplitude of about 0. 3 Vp-p, and an image amplitude is about 0.7 Vp-p. (When the VTR with S video output terminal is used, check also that neither chroma signal nor burst signal is remaining.) Also, connect the oscilloscope to the chroma signal terminal of the S VIDEO IN terminal and check that the burst signal for the chroma signal has a flat amplitude of about 0.3 Vp-p. Fig. 9-2 shows the Y and chroma signals used for adjustment.

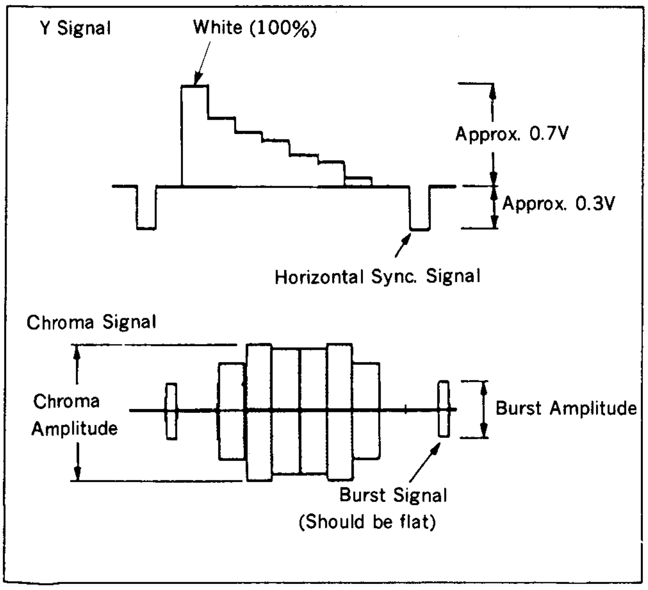

Y Signal
White (100%)
Approx. 0.7V
Approx. 0.3V
Horizontal Sync. Signal
Chroma Signal
Chroma Amplitude
Burst Amplitude
Burst Signal
(Should be flat)

Fig. 9-2. Pattern Generator Color Bar Signals

2) For VIDEO input

Connect the oscilloscope to the VIDEO IN terminal (PJ-21P board J902) and check that a video signal sync. signal amplitude is approx. 0.3V, image amplitude approx. 0.7V, and burst signal amplitude approx. 0.3V and flat and respectively.

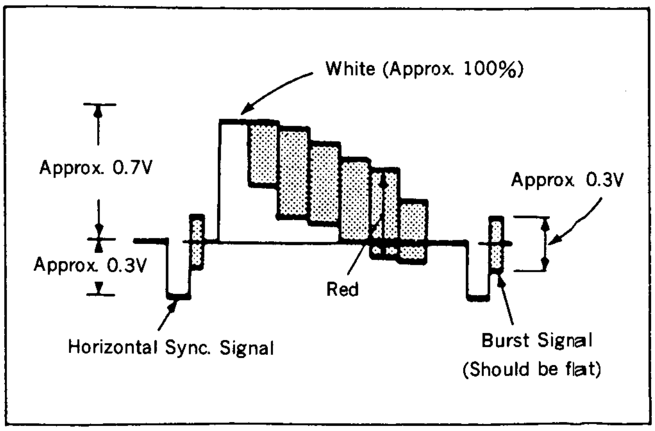

White (Approx. 100%)
Approx. 0.7V
Approx. 0.3V
Approx. 0.3V
Red
Horizontal Sync. Signal
Burst Signal
(Should be flat)

Fig. 9-3. Pattern Generator Color Bar Signal

[Alignment Tape]

The following alignment tapes are provided. Use the alignment tape specified in the signal blank for each adjustment. When using the operation checking tape for adjustment and no type is specified, you can use any operation checking tape.

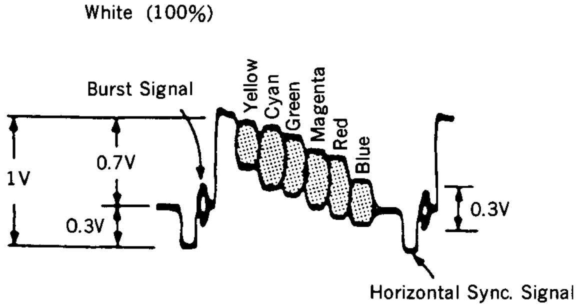
Tape	Recording Mode	Tape Type	Tape Speed	Recording content		Use
				Video Area	PCM Area	
Tracking WR5-1CP	L	MP	SP	CH2 : 1 MHz tape path adjustment signal, Switching position adjustment marker (CH1 : 9MHz)		Tape path adjustment, Switching position adjustment
Video frequency characteristic WR5-7CE	E	ME	LP	RF sweep 0~15MHz Marker 2, 4.5, 7, 8.5, 10MHz		Frequency characteristic adjustment
Operation checking WR5-3CSP or WR5-5CSP	L	MP	SP	● Video signal Color bar : 4min. Monoscope : 4min. ● Audio signal (AFM) 400Hz, 60%modulation	● Audio signal (PCM) Monoscope portion 20Hz, 20sec. 400Hz, 20sec. 14kHz, 20sec. Repeat 4 times Color bar portion 1kHz, 4min.	Operation checking
WR5-8CSE	E	ME	SP			
WR5-3CL	L	MP	LP	● Video signal Color bar : 4min. Monoscope : 4min. ● Audio signal (AFM) 400Hz, 60%modulation		
WR5-8CLE	E	ME	LP			

Note : Recording modes
L .... Conventional mode
E .... hi8 (high band) mode

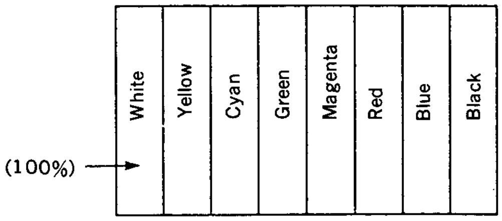
Tape types
MP .... Coated metal tape
ME .... Evaporated metal tape

Fig. 9-4 shows the color bar signal recorded in the alignment tape.

Note : Measure at the VIDEO OUT terminal (terminated at 75Ω).



Color Bar Signal Waveform



Color Bar Pattern

Fig 9-4. Alignment Tape Color Bar Signal

[I/O Level and Impedance]

Video input	phono jack	
(AUS, E MODEL)	Input signal :	1 Vp-p, 75Ω unbalance, sync. negative
Video output	phono jack	
	Output signal :	1 Vp-p, 75Ω unbalance, sync. negative
S video input	(4-pin mini-DIN)	
(AUS, E MODEL)	Luminance signal :	1 Vp-p, 75Ω unbalance, sync. negative
	chroma signal :	0.3 Vp-p, 75Ω unbalance
S video output	(4-pin mini-DIN)	
	Luminance signal :	1 Vp-p, 75Ω unbalance, sync. negative
	chroma signal :	0.3 Vp-p, 75Ω unbalance
Auido input	phono jack	
(AUS, E MODEL)	Input level :	−7.5dBs (0dBs= 0.775Vrms)
Audio output	phono jack	
	Specified output :	−7.5dBs (at 47kΩ load)
	Output impedance :	2.2kΩ or less

9-1-3. Recording Mode (E Mode/L Mode) Changeover

The recording mode of this equipment is changed over as shown in the table below. The playback mode (E mode/L mode) is automatically changed over depending on the recording mode for the tape to be played back.

hi8 Switch (L Mode/E Mode Selector Switch) (PJ-21P Board S902)	CAMERA/VTR Power Switch (FC-20P Board S095)	S VIDEO IN Terminal (PJ-21P Board J901)	Tape Used	Recording Mode
AUTO (E mode)	CAMERA	Irrelevant	ME	E
			MPHG	
			MP	L
	VTR	Connector inserted	ME	E
			MPHG	
			MP	L
		Nothing inserted	ME	L
			MPHG	
			MP	
OFF (L mode)	Irrelevant	Irrelevant	ME	L
			MPHG	
			MP	

9-1-4. Recording Mode Adjustment

When the equipment is provided with the input terminal (AUS, E, Model), adjust the Recording mode and the E-E mode with the VTR mode.

And when the equipment is not provided with the input terminal (AEP, UP Model), adjust the Recording mode and the E-E mode with the CAM REC mode and the CAM STANDBY mode.

9-1-5. Service Mode

For details, refer to SECTION 10. SERVICE MODE.

9-2. POWER SUPPLY CHECK

9-2-1. Supply Voltage Check (DC-DC Converter)

Mode	E-E
Measuring instrument	Digital voltmeter
SS 5V check	
Measurement point	CN010 pin ①, CN011 pin ⑦
Specified value	4.90±0.15Vdc
VI 5V check	
Measurement point	CN010 pin ③,④
Specified value	4.90±0.15Vdc
AUDIO 5V check	
Measurement point	CN010 pin ⑧
Specified value	4.90±0.15Vdc
EVF 5V check	
Measurement point	CN011 pin ④
Specified value	4.90±0.15Vdc

[Check Method]

1) Each supply voltage must meet its specified value.

9-3. ADJUSTMENT OF SYSTEM CONTROL SYSTEM

9-3-1. Clock Accuracy Adjustment (FD-10P Board)

Mode	E-E
Measurement point	IC101 pin ⑲ (check land "X'tal")
Measuring instrument	Frequency counter
Adjustment element	CT101
Specified value	$512.004^{+0.001}_{-0.002}$ Hz

[Adjustment Method]

1) Adjust to $512.004^{+0.001}_{-0.002}$ Hz with CT101.

9-3-2. Battery Down Adjustment (SS-88P Board)

Note : Connect the camera block for adjustment.

Mode	E-E
Measurement point	Check with the adjustment remote control
Measuring instrument	
Adjustment element	RV001
Specified value	2:81

[Connection]

1) As shown in Fig. 9-5, connect the stabilized power supply and digital voltmeter.

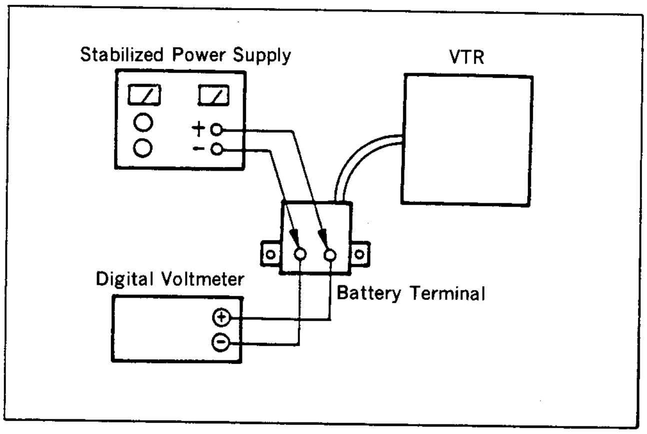
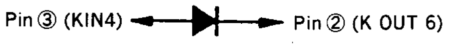


Fig. 9-5.

2) Connect the FC-20P board CN096 with a diode (1SS119 or its equivalent) (test mode 1).



[Adjustment Method]

1) Adjust the supply voltage to 5.48±0.01Vdc.
2) Select Category 1 of the adjustment remote control to display a battery voltage. (Refer to [Service mode] .)
3) With RV001, adjust the indication of the LCD display to 2 : 83, and then adjust to 2 : 81. (to the point where the indication is changed from 2 : 82 to 2 : 81)

9-3-3. Battery Down Check

Note : Connect the camera block for adjustment.

Mode	Camera REC
Measurement point	Check with the LCD display on the FD-10P board.
Measuring instrument	
Specified value	Battery pre-end indication at 5.64 $^{+0.01}_{-0.04}$ Vdc (＊ 1) Battery end indication at 5.48±0.01Vdc (＊ 2)

＊ 1 : The mark 🔋 on the LCD blinks slowly.

＊ 2 : The mark 🔋 on the LCD blinks quickly.

[Connection]

1) As shown in Fig. 9-5, connect the stabilized power supply and digital voltmeter.
2) Remove the diode conncted in battery down adjustment.

[Check Method]

1) Adjust the supply voltage to 6.5±0.1Vdc and select the camera REC mode.
2) Lower the supply voltage slowly to 5.64 $^{+0.01}_{-0.04}$ Vdc.
3) Check that the battery pre-end indication (＊ 1) is shown on the LCD.
   When the battery pre-end indicaition is not shown with 5.64Vdc, check with 5.56±0.01Vdc. And when the battery pre-end indication is shown, it is normal.
4) Lower the supply voltage slowly to 5.48±0.1Vdc.
5) Check that the VTR is shut off and the battery end indication (＊ 2) is shown on the LCD.

9-4. ADJUSTMENT OF SERVO SYSTEM

9-4-1. PWM Oscillation Frequency Adjustment (SS-88P Board)

Mode	Playback
Signal	Arbitrary tape
Measurement point	Q207 collector
Measuring instrument	Frequency counter
Adjustment element	RV201
Specified value	480±2kHz

[Adjustment Method]

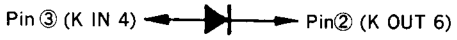
1) Adjust to 480±2kHz with RV201.

9-4-2. Switching Position Adjustment (SS-88P Board)

Mode	Playback
Signal	Alignment tape for tracking adjustment (WR5-1CP)
Measurement point	CH1 : MR-20 board CN802 pin ③ (RF CH2) CH2 : MR-20 board CN802 pin ② (RF SWP)
Measuring instrument	Oscilloscope
Adjustment element	RV002
Specified value	0±5μsec

[Connection]

1) Connect CN096 of the FC-20P board with a diode (1SS119 or its equivalent). (test mode 1)



[Adjustment method]

1) Adjust RV002 to coinside a marker of RF CH2 waveform with a fall of RF SWP waveform.

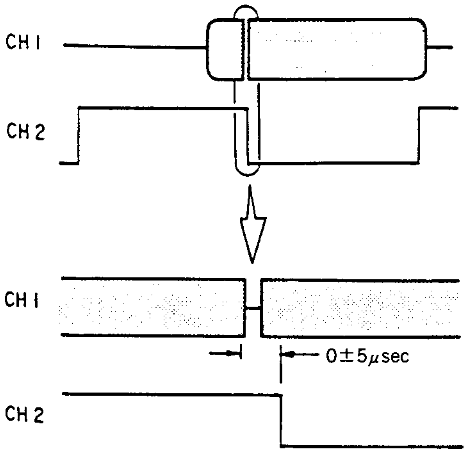


Fig. 9-6.

9-5. ADJUSTMENT OF VIDEO SYSTEM

When adjusting the video system, follow the adjustment sequence below as a rule..Color video signals supplied from the pattern generator are used as video input signals for video system adjustment in the recording mode.Check that the signals meet the specifications provided in Fig. 9-3 and "Input Signal Check".

[Adjustment Sequence]

1) Playback frequency characteristic adjustment
2) Flying erase check
3) X'tal oscillator f_0 adjustment
4) Y/C separation adjustment
5) Y series flow filter adjustment
6) SYNC AGC, loop gain adjustment
7) VI-71 boad VIDEO OUT level adjustment
8) PB enphasis adjustment
9) L mode PB Y level adjustment
10) E mode PB Y level adjustment
11) L mode Y FM carrier frequency, deviation adjustment
12) E mode Y FM carrier frequency, deviation adjustment
13) $375f_H$ VCO adjustment
14) Chroma emphasis f_0 adjustment
15) Carrier balance adjustment
16) REC C RF Trap adjustment
17) F_H VCO adjustment
18) GCA Gain adjustment
19) Recording current adjustment
20) VIDEO OUT level adjustment
21) Y OUT level adjustment
22) C OUT level adjustment
23) Character generator f_0 adjustment
24) DDS character position adjustment

9-5-1. Playback Frequency Characteristic Adjustment (MR-20 Board)

(1) CH1, CH2 Adjustment

Description in [ ] is for CH2 adjustment.

Mode	Playback
Signal	Alignment tape for frequency characteristic adjustment (WR5-7CE)
Measurement point	CN802 pin ③ [pin ④] External trigger : CN802 pin ② [RF SWP] Trigger scope : +, [−]
Measuring instrument	Oscilloscope
Adjustment element	RV802 [RV803]
Specified value	When the 4.5MHz signal level is set to 4, the 8.5 MHz signal level is 2±0.2.

[Adjustment Method]

1) Adjust RV802 [RV803] so that the 8.5MHz signal level will be 2±0.2 when the 4.5 MHz signal level is set to 4.

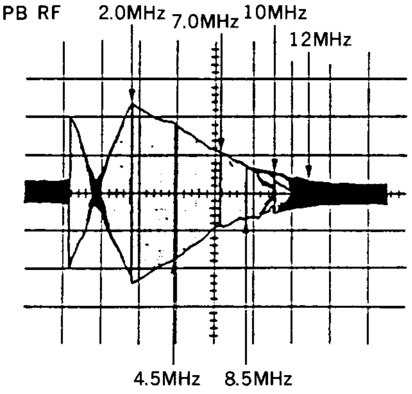


Fig. 9-7.

(2) CH1′ Adjustment

Mode	Playback (test mode 2)
Signal	Alignment tape for frequency characteristic adjustment (WR5-7CE)
Measurement point	CN802 pin ⑤ External trigger : CN802 pin ② [RF SWP] Trigger slope : −
Measuring instrument	Oscilloscope
Adjustment element	RV801
Specified value	The 8.5MHz signal level is 2±0.2 when the 4.5 MHz signal level is set to 4.

[Connection]

1) Connect the FC-20P board CN096 pins ② (K OUT 6) and ① (K IN 5) with a jumper wire.(test mode 2)

[Adjustment Method]

1) Adjust RV801 so that the 8.5 MHz signal level will be 2± 0.2 when the 4.5MHz signal level is set to 4.

9-5-2. Flying Erase Check (MR-20 Board)

Mode	Recording
Signal	Arbitrary
Measurement point	TP804
Measuring instrument	Oscilloscope and frequency counter
Specified value	Frequency : 7.5MHz or more, Voltage : 7.0Vp-p or more

[Check Method]

1) Set an MP type cassette tape and select the recording mode.
2) Check that an oscillation frequency is 7.5MHz or more and an oscillation voltage is 7.0Vp-p or more, respectively.

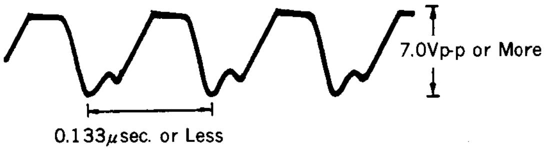


Fig. 9-8.

9-5-3. X'tal Oscillator f_0 adjustment (VI-72 Board)

Mode	Playback
Signal	Alignment tape for operation checking
Measurement point	IC602 pin ⑭
Measuring instrument	Frequency counter
Adjustment element	CV601
Specified value	4433619±50Hz

Note : Connect the frequency counter through a high-impedance (10MΩ or so), low-capacity (10 PF or less) buffer.

[Adjustment Method]

1) Adjust to 4433619±50Hz with CV601.

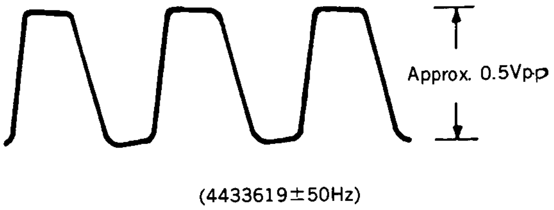


Fig. 9-9.

9-5-4. Y/C Separation Adjustment (HD-8P/VI-72 Board)

Mode	E-E or REC
Signal	Color bar (Composite Video)
Measurement point	HD-8P board pin ㉖
Measuring instrument	Oscilloscope
Adjustment element	HD-8P board RV202 VI-72 board LV601
Specified value	Minimum redisual chroma components

[Adjustment Method]

1) Adjust RV202 of the HD-8P board and LV601 of the VI-72 board alternately to minimize redisual chroma components.

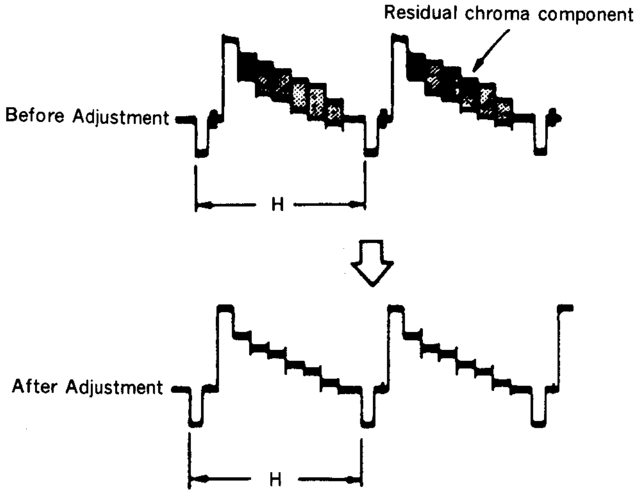


Fig. 9-10.

9-5-5. Y Comb Filter Adjustment (HD-8P/VI-72 Board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement point	HD-8P board pin ⑨
Measuring instrument	Oscilloscope
Adjustment element	HD-8P board RV201
Specified value	Minimum amplitude between white (100%) and sync. tip

[Connection]

1) Connect a 22kΩ resistor in series between the HD-8P board pin ⑨ and probe of 10 : 1.

[Adjustment Method]

1) Adjust RV201 to minimize an amplitude between the white (100%) and sync. tip.

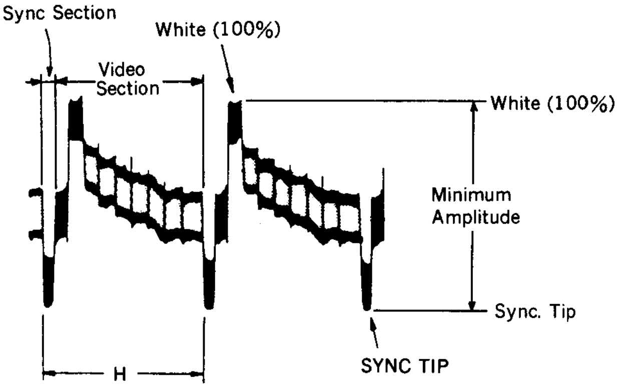


Fig. 9-11.

9-5-6. SYNC AGC, Loop Gain Adjustment

(1) SYNC AGC Adjustment (VI-71 Board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement point	IC410 pin ㊲
Measuring instrument	Oscilloscope
Adjustment element	RV409
Specified value	0.50±0.01Vp-p

[Adjustment Method]

1) Adjust to 0.50±0.01Vp-p with RV409.

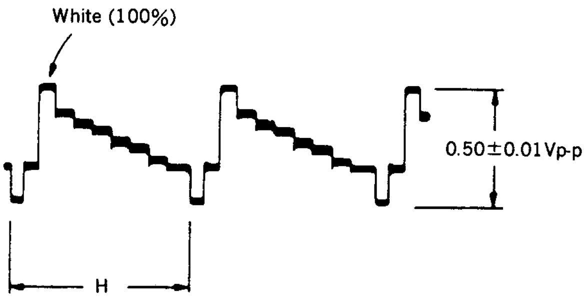


Fig. 9-12.

(2) Loop Gain Adjustment (VI-71 Board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement point	IC410 pin ㊴
Measuring instrument	Oscilloscope
Adjustment element	RV401
Specified value	0.50±0.02Vp-p

[Adjustment Method]

1) Adjust to 0.50±0.02Vp-p with RV401.

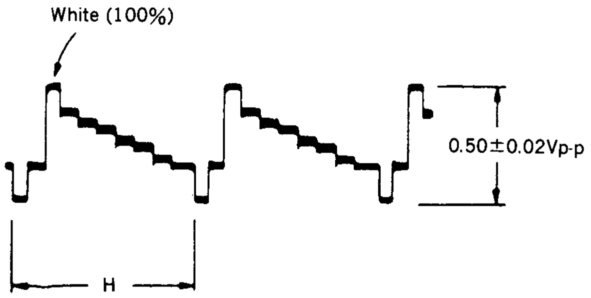


Fig. 9-13.

9-5-7. VIDEO OUT Level Adjustment (VI-71 Board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement point	CN403 pin ② (VIDEO OUT)
Measuring instrument	Oscilloscope
Adjustment element	RV410
Specified value	1.00±0.025Vp-p

[Adjustment Method]

1) Adjust to 1.00±0.025Vp-p with RV410.

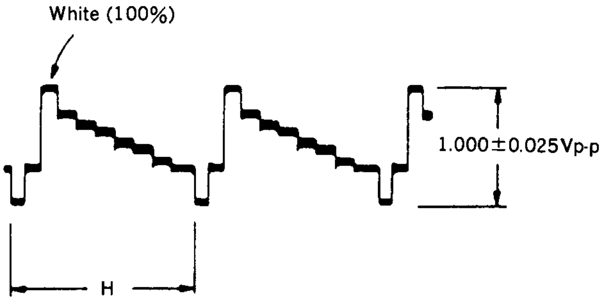


Fig. 9-14.

9-5-8. PB Emphasis Adjustment (VI-71 Board)

Mode	Playback
Signal	Alignment tape for operation checking (WR5-5CSP or WR5-3CSP) Color bar portion
Measurement point	CN403 pin ② (VIDEO OUT)
Measuring instrument	Oscilloscope
Adjustment element	RV408
Specified value	The pedestal level, sync. tip level and each luminance level should be flat.

Note : The EDIT switch (FK-15 board S086) must be turned off.

[Adjustment Method]

1) Flaten the pedestal level, sync. tip level and each luminance level with RV408.

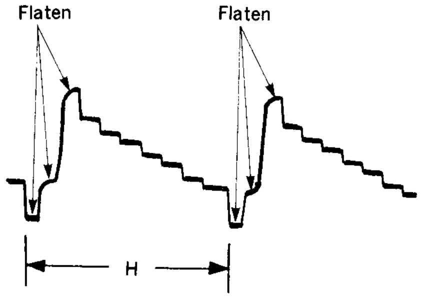


Fig. 9-15.

9-5-9. L Mode PB Y Level Adjustment (VI-71 Board)

Mode	Playback
Signal	Alignment tape for operation checking (WR5-5CSP or WR5-3CSP) Color bar portion
Measurement point	CN403 pin ② (VIDEO OUT)
Measuring instrument	Oscilloscope
Adjustment element	RV416
Specified value	1.02±0.025Vp-p

Note : The EDIT switch (FK-15 board S086) must be turned off.

[Adjustment Method]

1) Adjust to 1.02±0.025Vp-p with RV416.
2) Make E mode PB Y level adjustment as described in 9-5-10.

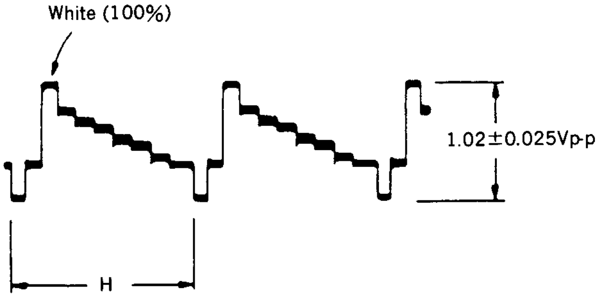


Fig. 9-16.

9-5-10. E Mode PB Y Level Adjustment (VI-71 Board)

Mode	Playback
Signal	Alignment tape for operation checking (WR5-8CSE) Color bar portion
Measurement point	CN403 pin ② (VIDEO OUT)
Measuring instrument	Oscilloscope
Adjustment element	RV417
Specified value	1.02±0.025Vp-p

Note 1 : The EDIT switch (FK-15 board S086) must be turned off.

Note 2 : Make this adjustment after completing L mode PB Y level adjustment mentioned in 9-5-9.

[Adjustment Method]

1) Adjust 1.02±0.025Vp-p with RV417.

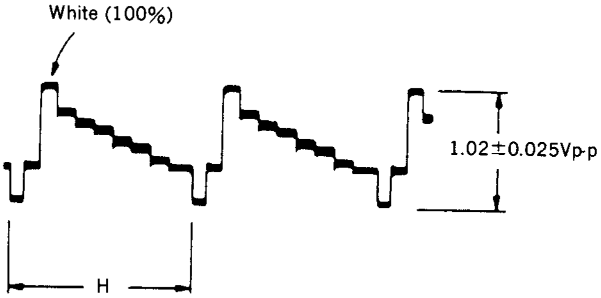


Fig. 9-17.

9-5-11. L Mode Y FM Carrier Frequency, Y FM Deviation Adjustment

Note : After completing this adjustment, be sure to make E mode Y FM carrier frequency, Y FM deviation adjustment as described in 9-5-12.

(1) L Mode Y FM Carrier Frequency Adjustment (VI-71 Board)

Mode	E-E
Signal	No signal
Measurement point	IC409 pin ⑭ (REC Y RF)
Measuring instrument	Frequency counter
Adjustment element	RV406
Specified value	4.38±0.05MHz

[Adjustment Method]

1) Set an MP type cassette tape.
2) Adjust to 4.38±0.05MHz with RV406.
3) Make L mode Y FM deviation adjustment described in (2) below.

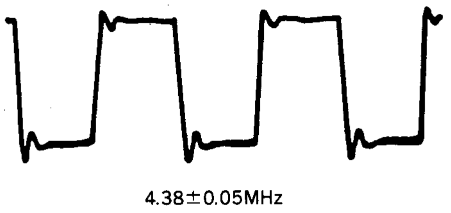


Fig. 9-18.

(2) L Mode Y FM Deviation Adjustment (VI-71 Board)

Mode	Recording and playback
Signal	Color bar (S VIDEO)
Measurement point	CN403 pin ② (VIDEO OUT)
Measuring instrument	Oscilloscope
Adjustment element	RV405
Specified value	Playback level of 1.00±0.05Vp-p

Note 1 :VIDEO OUT level adjustment, PB Y level adjustment and L mode Y FM carrier frequency adjustment must have been completed.

Note 2 : The EDIT switch (FK-15 board S086) must be turned off.

[Adjustment Method]

1) Set an MP type cassette tape.
2) Record the color bar signal.
3) Playback the recorded signal.
4) Check the playback output level.
   Specified value : 1.00±0.05Vp-p.
5) When the specified value is not met, turn RV405 as follows and repeat the steps 1) through 3) above.

	RV405 Rotating Direction
when larger than specified value	Counterclockwise direction (↶)
When smaller than specified value	Clockwise direction (↷)

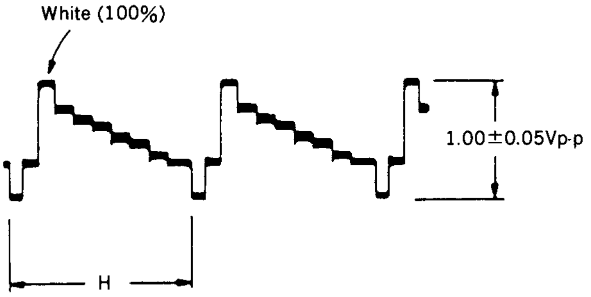


Fig. 9-19.

9-5-12. E Mode Y FM Carrier Frequency, Y FM Deviation Adjustment

Note 1 : Make this adjustment after completing "9-5-11 L Mode Y FM Carrier Frequency, Y FM Deviation Adjustment".

Note 2 : Make adjustment after checking the following 2 points :

1. The hi 8 switch (E/L mode selector switch : PJ-21P board S902) must be shifted to the AUTO side.
2. A connector must be inserted into the S VIDEO IN terminal (PJ-21P board J901) (at no-signal time as well).

(1) E Mode Y FM Carrier Frequency Adjustment (VI-71 Board)

Mode	E-E
Signal	No signal
Measurement point	IC409 pin ⑭ (REC Y RF)
Measuring instrument	Frequency counter
Adjustment element	RV407
Specified value	5.99±0.05MHz

[Adjustment method]

1) Set an ME type cassette tape.
2) Adjust to 5.99±0.05MHz with RV407.
3) Make E mode Y FM deviation adjustment as described in (2) below.

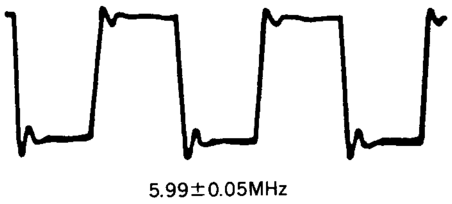


Fig. 9-20.

(2) E Mode Y FM Deviation Adjustment (VI-71 Board)

Mode	Recording and playback
Signal	Color bar (S VIDEO)
Measurement point	CN403 pin ② (VIDEO OUT)
Measuring instrument	Oscilloscope
Adjustment element	RV404
Specified value	Playback level of 1.00±0.05Vp-p

Note 1 :VIDEO OUT level adjustment, PB Y level adjustment and E mode Y FM carrier frequency adjustment must have been completed.

Note 2 : The EDIT switch (FK-15 board S086) must be turned off.

[Adjustment Method]

1) Set an ME type cassette tape.
2) Record the color bar signal.
3) Playback the recorded signal.
4) Check the playback output level.
   Specified value: 1.00±0.05Vp-p
5) When the specified value is not met, turn RV404 as follows and repeat the steps 1) through 3) above.

	RV404 Rotating Direction
When larger than specified value	Counterclockwise direction (↶)
When smaller than specified value	Clockwise direction (↷)

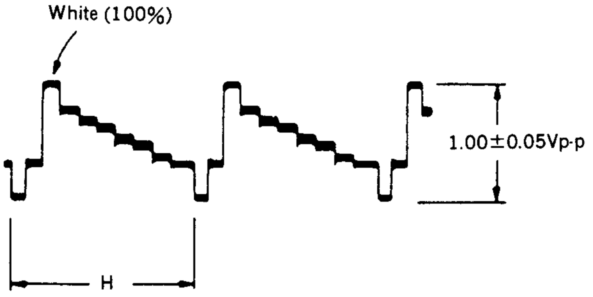


Fig. 9-21.

9-5-13. $375f_H$ VCO Adjustment (VI-72 Board)

Mode	E-E
Signal	Color bar
Measurement point	IC602 pin ㉖
Measuring instrument	Digital voltmeter
Adjustment element	RV602
Specified value	3.0±0.4Vdc

[Adjustment Method]

1) Adjust to 3.0±0.4Vdc with RV602.

9-5-14. Chroma Emphasis Adjustment (VI-72 Board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement point	IC602 pin ㊹
Measuring instrument	Oscilloscope
Adjustment element	FL603
Specified value	Be sure to confirm that the f_0 component is minimum and zero cross appears between green and magenta.

[Connection]

1) Enter 2.5 Vdc to the IC602 pin ㊼ (ACC ADJ) through the following connection.

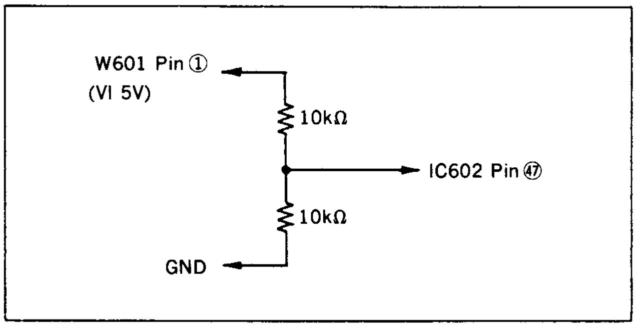


Fig. 9-22.

[Adjustment Method]

1) Adjust with FL603 so that the amplitude of the flat cyan section of the chroma signal becomes minimum.
   At this point, be sure to confirm that the zero cross appears between the green and magenta.

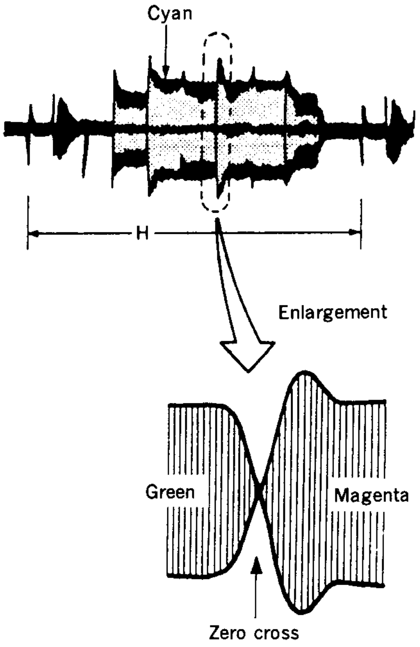


Fig. 9-23.

9-5-15. Carrier Balance Adjustment (VI-72 Board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement point	IC602 pin ㊵
Measuring instrument	Oscilloscope
Adjustment element	RV601
Specified value	5.17MHz components minimum

[Adjustment Method]

1) Minimize 5.17MHz components with RV601.

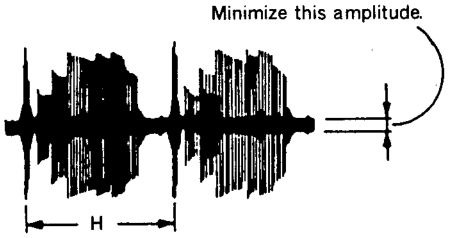


Fig. 9-24.

9-5-16. REC C RF Trap Adjustment (VI-72 Board)

Mode	E-E
Signal	Monoscope
Measurement point	Q601 (emiter) (REC C RF)
Measuring instrument	Oscilloscope
Adjustment element	CV602
Specified value	Minimize Ⓐ (Less than 50mVp-p)

[Adjustment Method]

1) Adjust to minimize Ⓐ with CV602.

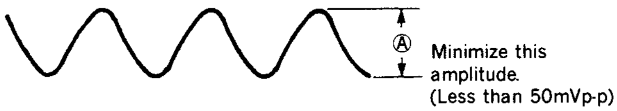


Fig. 9-25.

9-5-17. F_H VCO Adjustment (VI-72 Board)

Mode	E-E
Signal	Color bar (VIDEO)
Measurement point	IC603 pin ⑮
Measuring instrument	Frequency counter
Adjustment element	RV604
Specified value	15,625±20Hz

[Connection]

1) Connect the IC603 pins ⑫ and ⑥ (GND) with a jumper wire.

[Adjustment Method]

1) Adjust to 15,625±20Hz with RV604.

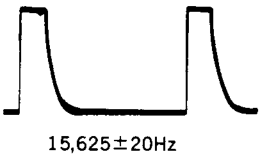


Fig. 9-26.

9-5-18. GCA Gain Adjustment (VI-72 Board)

Mode	Playback and STILL, CUE, REVIEW
Signal	Alignment tape for operation checking (WR5-5CSP or WR5-3CSP) Color bar portion
Measurement point	IC603 pin ⑤
Measuring instrument	Oscilloscope
Adjustment element	RV603
Specified value	b=(a−20)±15mVp-p

[Adjustment Method]

1) Playback, and measure the burst level. (this level is ⓐ)
2) Set to the STILL, CUE and REVIEW mode, and measure the burst level once more. (this level is ⓑ)
3) With RV604, adjust the burst level of the STILL, CUE and REVIEW mode to ⓑ=(ⓐ−20)±15mVp-p.

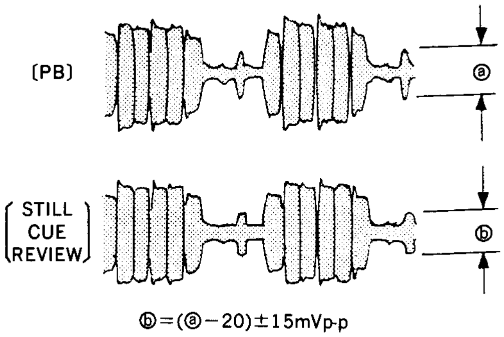


Fig. 9-27.

9-5-19. Recording Current Adjustment

Make this adjustment in the E mode, using the ME tape. Before adjustment, check the following 2 points :

1) The hi 8 switch (E/L mode selector switch: PJ-21P board S902) must be shifted to the AUTO side (E mode side).
2) A connector must be inserted into the S VIDEO IN terminal (PJ-21P board J901). (at no-signal time as well)
   Also, remove CN002 of the MK-5 board in order to prevent the index system from being affected.

(1) REC Y Recording Current Adjustment (MR-20 Board)

Mode	Recording
Signal	No signal
Measurement point	TP802 (HR-3P board pin ⑳: CH1 CHECK)
Measuring instrument	Oscilloscope
Adjustment element	RV806
Specified value	180±10mVp-p

Note 1 : After REC Y recording current adjustment, be sure to wake REC C, REC AFM and REC ATF recording current adjustments.

[Adjustment Method]

1) Set an ME type cassette tape and select the recording mode.
2) Adjust to 180±10mVp-p with RV806.

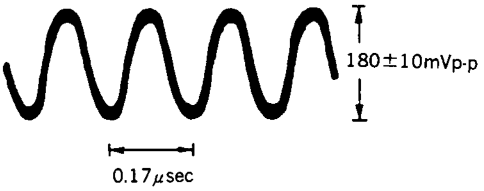


Fig. 9-28.

(2) REC C Recording Current Adjustment (MR-20 Board)

Mode	Recording
Signal	Color bar (S VIDEO)
Measurement point	TP802 (HR-3P board pin ⑳: CH1 CHECK)
Measuring instrument	Oscilloscope
Adjustment element	RV805
Specified value	45±3mVp-p

Note 1 : After REC C recording current adjustment, be sure to make REC AFM and REC ATF recording current adjustments.

[Connection]

1) Connect the following 3 sections with jumper wires.
   1. MR-20 board CN804 pin ⑨ (REC VI RF) to pin ⑧ (REG 5V)
   2. AT-7P board CN310 pin ⑳ (REC ATF) to pin ⑭ (SS 5V)
   3. AT-7P board CN310 pin ⑩ (REC AFM) to pin ⑤ (AUDIO 5V)

[Adjustment Method]

1) Set an ME type cassette tape and select the recording mode.
2) Adjust to 45±3mVp-p with RV805.

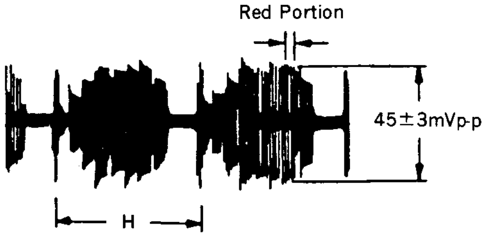


Fig. 9-29.

(3) REC AFM Recording Current Adjustment (AT-7P Board)

Mode	Recording
Signal	No signal
Measurement point	MR-20 board TP802 (HR-3P board pin ⑳ : CH1 CHECK)
Measuring instrument	Oscilloscope
Adjustment element	RV350
Specified value	15±1.5mVp-p

Note 1 : When the TP802 signal level is too low to read, connect directly through a 100Ω resistor as shown in the figure below instead of using a probe of 10 : 1.

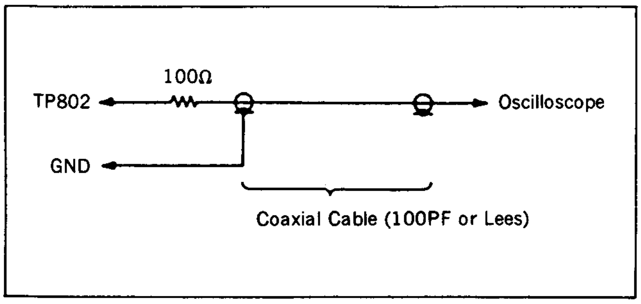

100Ω
TP802
Oscilloscope
GND
Coaxial Cable (100PF or Lees)

Fig. 9-30.

[Connection]

1) Connect the following 2 sections with jumper wires :
   1. MR-20 board CN804 pin ⑨ (REC VI RF) to pin ⑧ (REG 5V)
   2. AT-7P board CN310 pin ⑳ (REC ATF) to pin ⑭ (SS 5V)

[Adjustment Method]

1) Set an ME type cassette tape and select the recording mode.
2) Adjust to 15±1.5mVp-p with RV350.

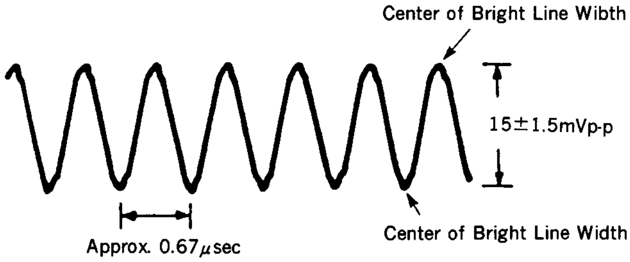

Center of Bright Line Wibth
15±1.5mVp-p
Approx. 0.67μsec
Center of Bright Line Width

Fig. 9-31.

(4) REC ATF Recording Current Adjustment (AT-7P Board)

Mode	Recording
Signal	No signal
Measurement point	MR-20 board TP802 (HR-3P board pin ⑳ : CH1 CHECK)
Measuring instrument	Oscilloscope
Adjustment element	RV310
Specified value	12±1.5mVp-p

Note 1 : When the TP802 signal level is too low to read, connect directly through a 100Ω resistor as shown in the figure below without using a probe of 10 : 1.

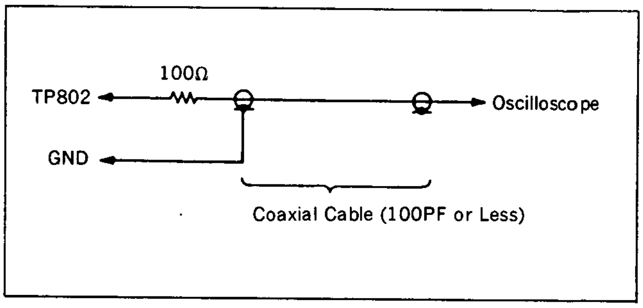

100Ω
TP802
Oscilloscope
GND
Coaxial Cable (100PF or Less)

Fig. 9-32.

[Connection]

1) Connect the following 2 sections with jumper wires.
   1. MR-20 board CN804 pin ⑨ (REC VI RF) to pin ⑧ (REG 5V)
   2. AT-7P board CN310 pin ⑩ (REC AFM) to pin ⑤ (AUDIO 5V)

[Adjustment Method]

1) Set an ME type cassette tape and select the recording mode.
2) Adjust to 12±1.5mVp-p with RV310.

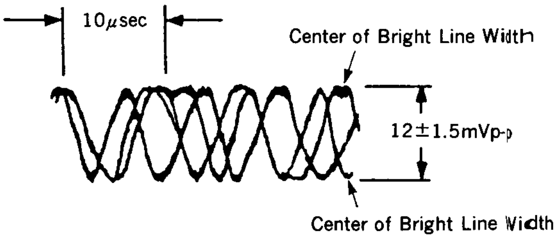

10μsec
Center of Bright Line Width
12±1.5mVp-p
Center of Bright Line Width

Fig. 9-33.

9-5-20. VIDEO OUT Level Adjustment (FD-10P Board)

Mode	E-E
Signal	Color bar (Composite video)
Measurement point	PJ-21P board J904 (VIDEO OUT)
Measuring instrument	Oscilloscope
Adjustment element	RV901
Specified value	1.00±0.025Vp-p

Note 1 : The PJ-21P board J904 (VIDEO OUT) must be terminated at 75Ω.

[Adjustment Method]

1) Adjust to 1.00±0.025Vp-p with RV901.

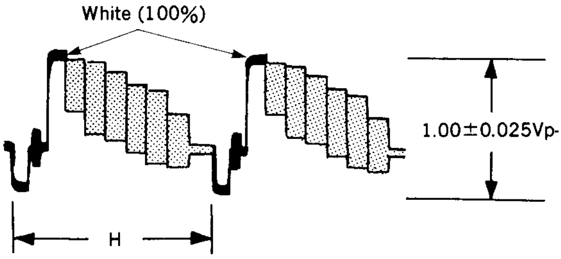


Fig. 9-34.

9-5-21. Y OUT Level Adjustment (FD-10P Board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement point	PJ-21P board J903 (S VIDEO OUT) Y signal terminal
Measuring instrument	Oscilloscope
Adjustment element	RV902
Specified value	1.00±0.025Vp-p

[Connection]

1) Terminate the signal terminal for the PJ-21P board J903 (S VIDEO OUT) at 75Ω.
2) Connect the FD-10P board W902 pin ⑧ (S POWER SAVE) and GND with a jumper wire.

[Adjustment Method]

1) Adjust to 1.00±0.025Vp-p with RV902.

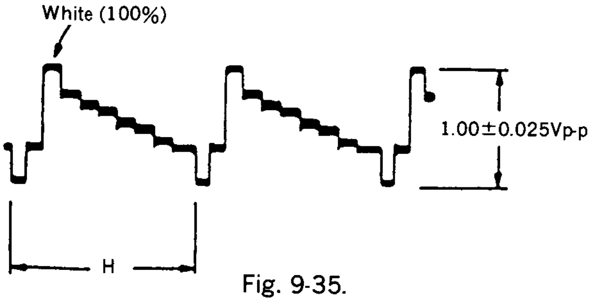


Fig. 9-35.

9-5-22. C OUT Level Adjustment (FD-10P Board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement point	Chroma signal terminal (C OUT) of the PJ-21P board J903 (S VIDEO OUT)
Measuring instrument	Oscilloscope
Adjustment element	RV903
Specified value	0.300±0.007Vp-p

[Connection]

1) Terminate the chroma signal terminal of the PJ-21P board J903 (S VIDEO OUT) at 75Ω.
2) Connect the FD-10P board W902 pin ⑧ (S POWER SAVE) and GND with a jumper wire.

[Adjustment Method]

1) Adjust the burst level to 0.300±0.007Vp-p with RV903.

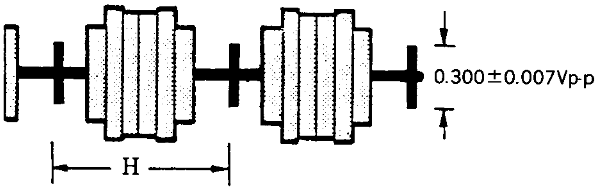


Fig. 9-36.

9-5-23. Character Generator f_0 Adjustment (VI-71 Board)

Mode	E-E
Signal	No signal
Measurement point	IC407 pin ⑲
Measuring instrument	Frequency counter
Adjustment element	CV401
Specified value	15675±50Hz

[Adjustment Method]

1) Adjust to 15675±50Hz with CV401.

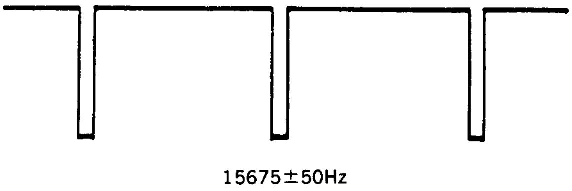


Fig. 9-37.

9-5-24. DDS Character Position Adjustment (VI-71 Board)

Mode	Playback (data screen ON)
Signal	Alignment tape for operation checking, Color bar portion
Measurement point	Monitor TV screen
Measuming instrument	Monior TV
Adjustment element	CV402
Specified value	Adjust the red-blue change position as shown in the figure.

[Adjustment Method]

1) Turn on the data screen with the DATA SCREEN button (FK-15 board S080).
2) With CV402, Adjust the red-blue change position as shown in the figure.

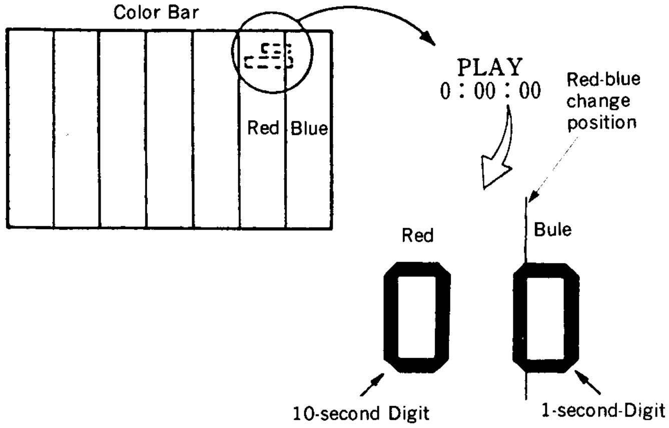

Color Bar
Red
Blue
PLAY
0 : 00 : 00
Red-blue change position
Red
Bule
10-second Digit
1-second-Digit

Fig. 9-38.

9-6. ADJUSTMENT OF INDEX SYSTEM

9-6-1. PB VCO Free Oscillation Frequency Adjustment (MK-5 Board)

Mode	Playback
Signal	Arbitrary tape
Measurement point	TP001 (open-side terminal of R008)
Measuring instrument	Frequency counter
Adjustment element	RV003
Specified value	11.50±0.05MHz

[Connection]

1) Connect the IC002 pin① (DUTY) and IC002 pin⑥ (DVCC) with a jumper wire.
2) Remove CN002.

[Adjustment Method]

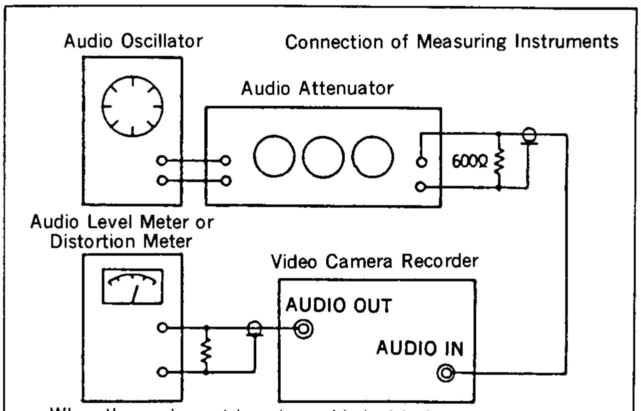
1) Press the INDEX button (FK-15 board S081).
2) Adjust to 11.50±0.05MHz with RV003.

9-7. ADJUSTMENT OF AUDIO SYSTEM

Enter the color bar signal to the VIDEO IN terminal to make adjustment. (Refer to Fig. 9.1.)

Specified values audio system adjustment are common for each recording mode (L or E mode) and each tape type (MP, ME, MPHG).

Note: When the equipment is not provided with the input terminal, follow the indication described in 〈 〉, and adjust the Mode and Signal.


Audio Oscillator
Connection of Measuring Instruments
Audio Attenuator
600Ω
Audio Level Meter or Distortion Meter
Video Camera Recorder
AUDIO OUT
AUDIO IN

When the equipment is not provided with the input terminal, remove CV311 of the AT-7P Board, and input the signal from CN311 pin ④. (the case of GND, from pin ③)

Fig. 9-39.

9-7-1. AFM Carrier Freqency Check (AT-7P Board)

Mode	Recording <Camera recording>
Signal	No signal Connect a shorting plug to the AUDIO IN terminal. <Connect the CN310 pin ③ and pin ④ with a jumper wire.>
Measurement point	CN310 pin ⑩ (REC AFM)
Measuring instrument	Frequency counter
Specified value	1.50±0.01MHz

[Check Method]

1) Short CN310 pin ④ with GND.
2) Check that the specified value of 1.50±0.01MHz is met.

9-7-2. Playback Level Check (AT-7P Board)

Mode	Playback
Signal	Alignment tape for operation checking
Measurement point	AUDIO OUT terminal
Measuring instrument	Audio level meter
Specified value	−7.5±2dBs

[Check Method]

1) Check that the specified value of −7.5±2dBs is met.

9-7-3. E-E Output Level Chek (AT-7P board)

Mode	Recording <Camera recording>
Signal	400Hz, −7.5dBs <400Hz, −35dBs>
Measurement point	AUDIO OUT terminal
Measuming instrument	Audio level meter
Specified value	−7.5±2dBs

[Check Method]

1) Check that the audio output level is −7.5±2dBs.

9-7-4. Overall Level Characteristic Check

Mode	Self recording and playback <Camera recording and playback>
Signal	400Hz, −7.5dBs <400Hz, −35dBs>
Measurement point	AUDIO OUT terminal
Measuring instrument	Audio level meter
Specified value	−7.5±3dBs

[Check Method]

1) Record a signal.
2) Playback the recorded portion.
3) Check that the audio output level is−7.5±3dBs.

9-7-5. Overall Distortion Factor Check

Mode	Self recording and playback <Camera recording and playback>
Signal	400Hz, −7.5dBs <400Hz, −35dBs>
Measurement point	AUDIO OUT terminal
Measuring instrument	Distortiom meter
Specified value	0.5% or less *1

[Check Method]

1) Record a signal.
2) Playback the recorded portion.
3) A distortion factor must be 0.5% or less *1

*1 This is a value when a distortion factor measuring filter (Fig. 9-40) is used. It is 1.0% or less when the filter not used.

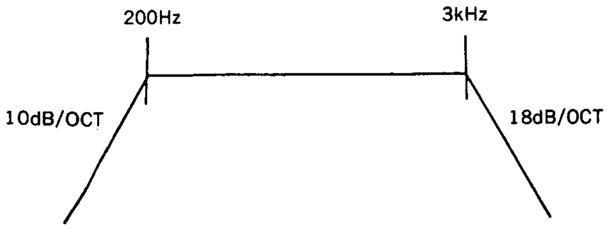


Fig. 9-40.

9-7-6. Overall Noise Level Check

Mode	Self recording and playback <Camera recording and playback>
Signal	No signal Connect a shorting plug to the AUDIO IN terminal. <Connect the CN310 pin ③ and pin ④ with a jumper wire.>
Measurement point	AUDIO OUT terminal
Measuring instrument	Audio level meter
Specified value	−67.5dBs or less

[Check Method]

1) Record a signal.
2) Playback the recorded portion.
3) The noise level must be −67.5dBs or less.

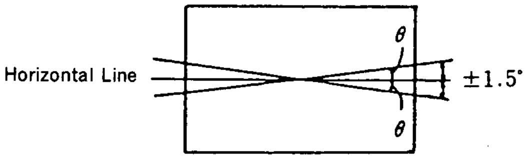
9-8. ADJUSTMENT OF ELECTRONIC VIEWFINDER

9-8-1. Horizontal Tilt Adjustment

Mode	playback
Signal	Alignment tape for operation checking Monoscope portion
Specified value	Refer to Fig. 9-41

[Adjustment Method]

1) With RV954 (BRIGHT) and RV953 (CONTRAST), adjust CRT brightness for easy viewing.
2) Loosen a DY (Deflection Yoke) lock nut.
3) Rotate the DY to make an image horizontal.
4) Tighten the DY lock nut. (Do not tighten it too much.)



Specified value: The image must be within ±1.5° of the horizontal line.

Fig. 9-41.

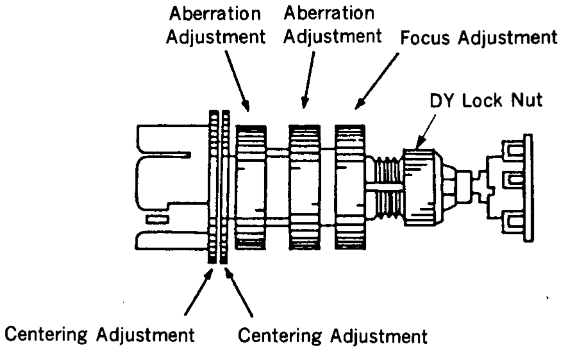


Fig. 9-42.

9-8-2. Centering Adjustment

Mode	Playback
Signal	Alignment tape for operation checking Monoscope portion
Specified value	Refer to Fig. 9-43

[Adjustment Method]

1) Equalize the top, bottom, right and left margins of the screen with the centering control rings. (Refer to Fig. 9-42)

Note 1 : Since a centering position is affected by terrestrial magnetism, turn by 360° in a horizontal direction and adjust at the center of displacement.

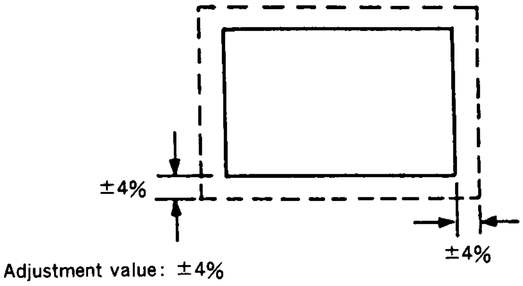


Fig. 9-43.

9-8-3. Focus Adjustment

Mode	Playback
Signal	Alignment tape for operation checking Monoscope portion

[Adjustment Method]

1) Adjust the focus to its best point with the focus control ring. (Refer to Fig. 9-42)

9-8-4. Aberration Adjustment

Mode	E-E
Signal	Dot pattern
Specified value	Refer to Fig.9-44.

[Adjustment Method]

1) With the aberration control rings, adjust a dot trail to 2 times or less of a dot diameter or fan-shaped aberration to the dot diameter or less.
2) When centering is dislocated at this point, perform centering again.

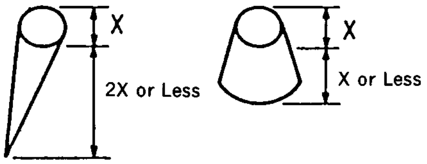


Fig. 9-44.

9-8-5. Horizontal Oscillation Frequency Adjustment (VF-16P Board)

Mode	Playback
Signal	Alignment tape for operation checking
Measurement point	Positive pole terminal of C954
Measuring instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment element	RV951
Specified value	2.60±0.05Vdc

[Adjustment Method]

1) Adjust to 2.60±0.05Vdc with RV951.

9-8-6. Horizontal Amplitude Adjustment (VF-16P Board)

Mode	Playback
Signal	Alignment tape for operation checking Monoscope portin
Adjustment element	C961 (pattern A)
Specified value	6±3%

[Adjustment Method]

1) Turn RV952 to adjust the top and bottom of a monoscope picture to the top and bottom ends of the screen.
2) Turn RV954 to adjust brightness to a normal level.
3) Short or open the pattern A of the H-size control capacitor (C961) to adjust horizontal overscan to 6±3% (total of the right and left). (Refer to Fig. 9-46)

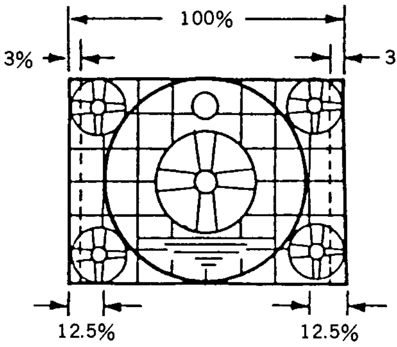


Fig. 9-45.

VF-16P Board (Component Side)

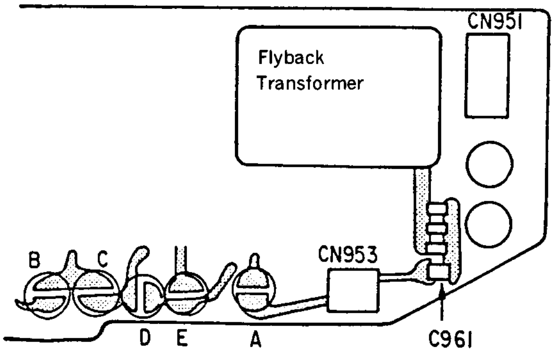


Fig. 9-46.

9-8-7. Vertical Amplitude Adjustment (VF-16P Board)

Mode	Playback
Signal	Alignment tape for operation checking Monoscope portion
Adjustment element	RV952
Specified value	6±3%

[Adjustment Method]

1) With RV952, adjust vertical overscan to 6±3% (total of the top and bottom).

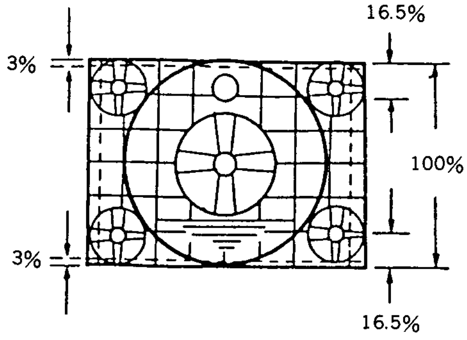


Fig. 9-47.

9-8-8. Brightness, Contrast Adjustment (VF-16P Board)

Mode	Playback
Signal	Alignment tape for operation checking Monoscope portion
Adjustment elementt	Brightness : RV954 Contrast : RV953

[Adjustment Method]

1) Turn RV953 and RV954 by turns to make adjustment so that the light and darkness of the gray scale is displayed properly. (The light portion must not be bright to such an extent that a crosshatch within a monoscope circle is blurred. The dark portion must not be dark to such an extent that the darkest and 2nd darkest parts of the gray scale cannot be distinguished.)

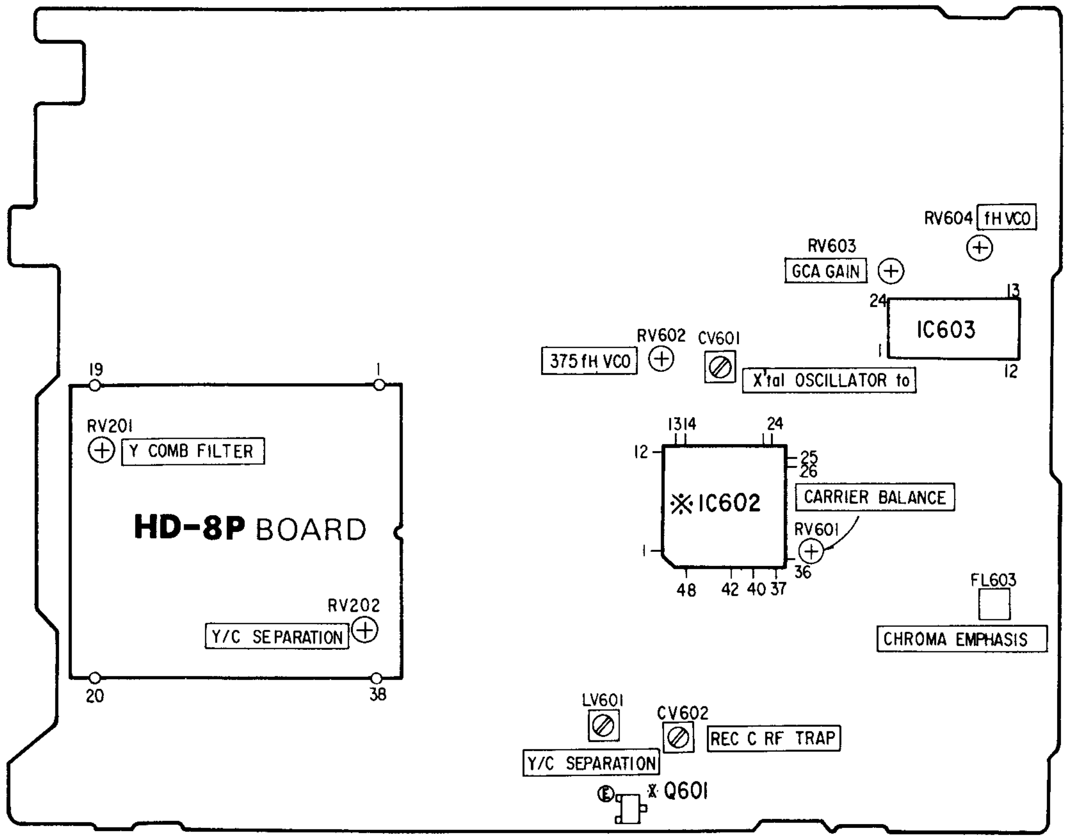
9-8-9. Horizontal Amplitude Vertical Amplitude and Focus Check

Both horizontal amplitude (9-8-6) and vertical amplitude (9-8-7) must be adjusted within their specified values. If not, make readjustment. In this case, make brightness and contrast adjustment in 9-8-8 again.

Also, check the focus, and when an image is not clear, make focus adjustment in 9-8-3 and aberration adjustment in 9-8-4.

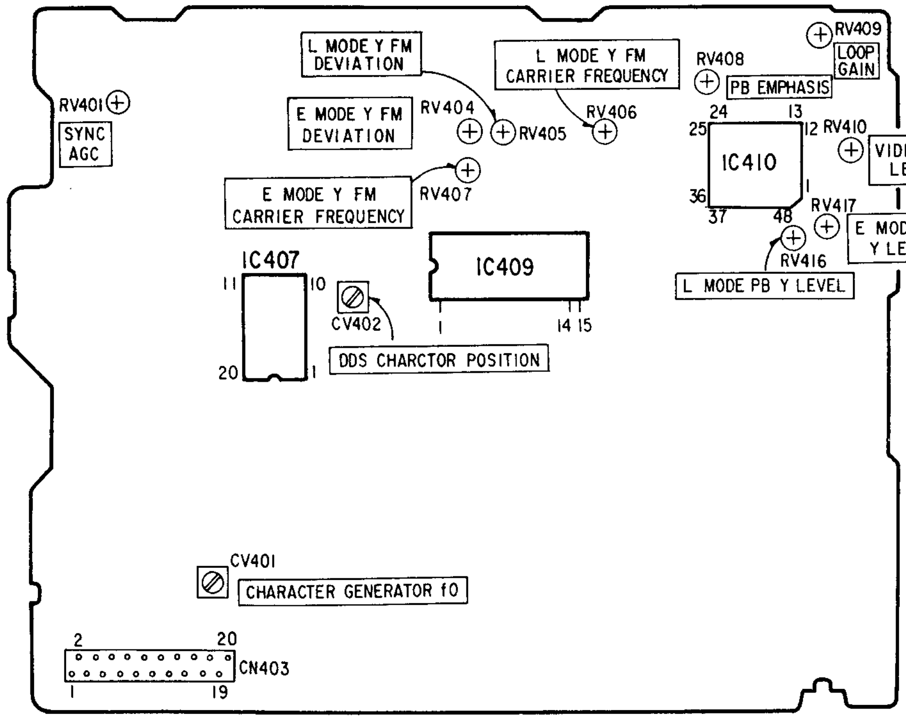
9-9. ADJUSTMENT PART LOCATION DIAGRAM

VI-72BOARD (COMPONENT SIDE)

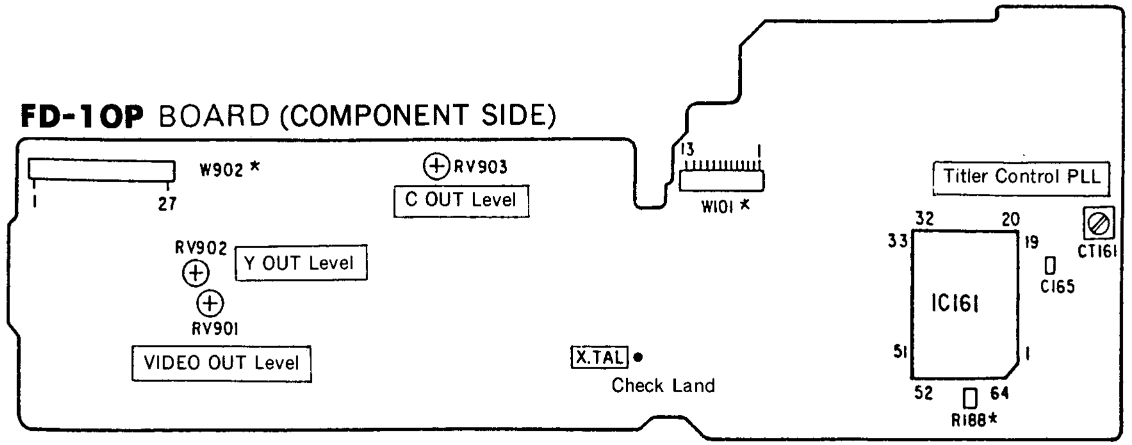

RV604 fH VCO
RV603 GCA GAIN
IC603
24
13
1
12
RV602 375fH VCO
CV601 X'tal OSCILLATOR fo
19
1
RV201 Y COMB FILTER
HD-8P BOARD
RV202 Y/C SEPARATION
20
38
1314
24
12
25
26
※IC602
CARRIER BALANCE
RV601
1
36
48 42 40 37
FL603
CHROMA EMPHASIS
LV601
Y/C SEPARATION
CV602
REC C RF TRAP
※Q601

※ The parts marked by "※" are located on the conductor side.

VI-71 BOARD (COMPONENT SIDE)

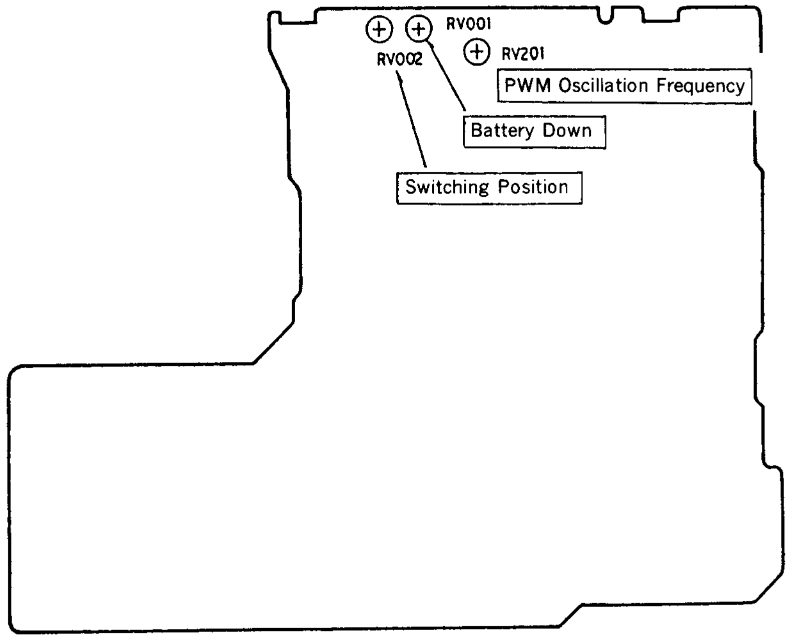

RV401
SYNC AGC
L MODE Y FM DEVIATION
E MODE Y FM DEVIATION
RV404
RV405
L MODE Y FM CARRIER FREQUENCY
RV406
E MODE Y FM CARRIER FREQUENCY
RV407
RV408
PB EMPHASIS
RV409
LOOP GAIN
24 13
25
12
RV410
IC410
VIDEO OUT LEVEL
36
1
37 48
RV417
E MODE PB Y LEVEL
RV416
L MODE PB Y LEVEL
IC407
11 10
20 1
CV402
DDS CHARCTOR POSITION
IC409
1
14 15
CV401
CHARACTER GENERATOR f0
2 20
CN403
1 19

FD-10P BOARD (COMPONENT SIDE)

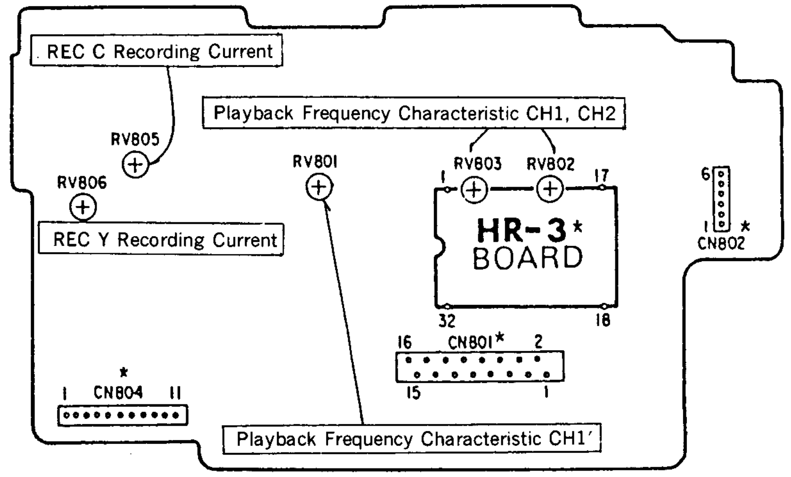

W902 *
1
27
RV903
C OUT Level
13 1
W101 *
Titler Control PLL
RV902
Y OUT Level
RV901
VIDEO OUT Level
X.TAL
Check Land
32 20
33
19
CT161
C165
IC161
51
1
52 64
R188*

The parts marked by "★" are located on the conductor side.

SS-88PBOARD (COMPONENT SIDE)

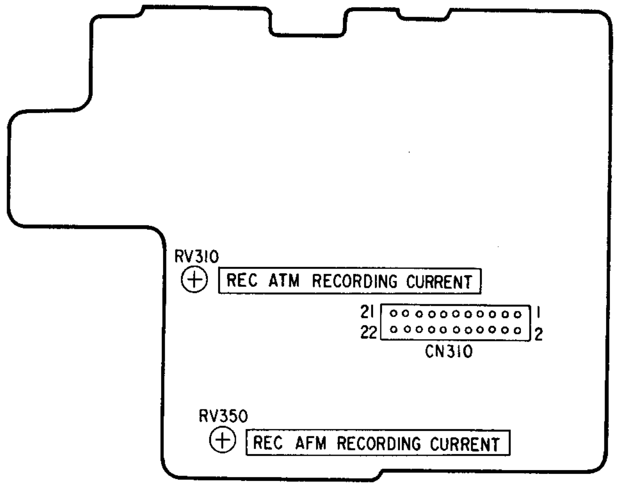

RV001
RV002
RV201
PWM Oscillation Frequency
Battery Down
Switching Position

MR-20BOARD (COMPONENT SIDE)

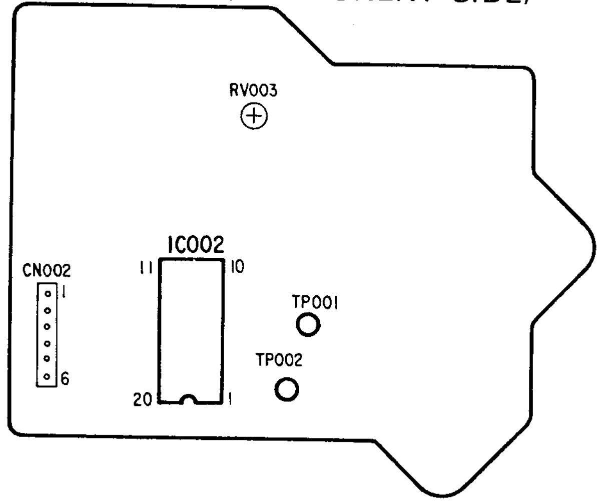

REC C Recording Current
Playback Frequency Characteristic CH1, CH2
RV805
RV806
REC Y Recording Current
RV801
RV803 RV802
1
17
HR-3* BOARD
32
18
6
1
CN802 *
16 CN801* 2
15 1
*
1 CN804 11
Playback Frequency Characteristic CH1'

The parts marked by "★" must be located on the component side.

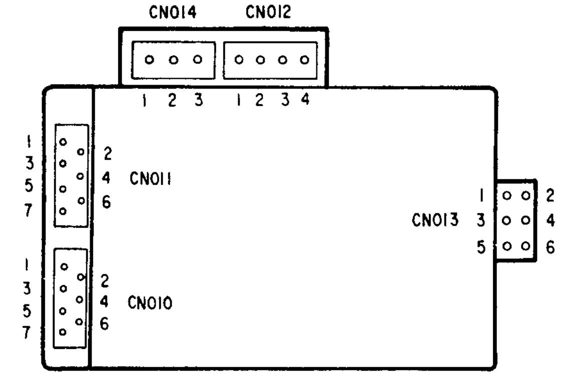
AT-7P BOARD (COMPONENT SIDE)


RV310
REC ATM RECORDING CURRENT
21
22
1
2
CN310
RV350
REC AFM RECORDING CURRENT

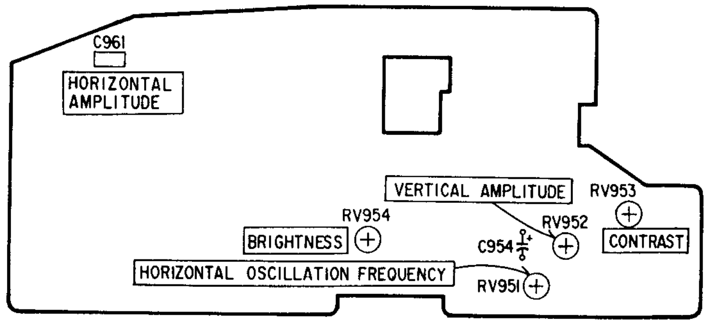
MK-5 BOARD(COMPONENT SIDE)


RV003
IC002
11
10
20
1
CN002
1
6
TP001
TP002

DC-DC CONVERTER(COMPONENT SIDE)


CN014
CN012
1 2 3
1 2 3 4
1
3
5
7
2
4
6
CN011
1
3
5
7
2
4
6
CN010
CN013
1
3
5
2
4
6

VF-16P BOARD (COMPONENT SIDE)


C961
HORIZONTAL AMPLITUDE
VERTICAL AMPLITUDE
RV953
RV954
RV952
BRIGHTNESS
C954
CONTRAST
HORIZONTAL OSCILLATION FREQUENCY
RV951

SECTION 10
SERVICE MODE

10-1. SERVICE MODE

This equipment has the service mode for its adjustment and operation check. The service mode has two types and they can be changed over by the connection between the VC-55P board checkpoint array pin (B6) and GND.

Service Mode	Function	Connection between Checkpoint Array Pin B6 and GND
Status Display mode	For adjustment and operation check of the video block	Open (connection not required)
EVR Adjust mode	For adjustment of the camera block	Short

(For the EVR Adjust mode, refer to Section 8 CAMERA ADJUSTMENTS)

10-1-1. Starting the Service Mode

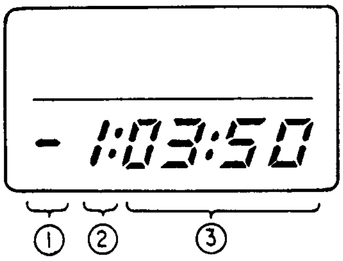
1) Connect the adjustment remote control to the REMOTE terminal (JC-3P board J070) of the main body.
2) Shift the HOLD switch of the adjustment remote control to the HOLD position (SERVICE position).

The Status Display mode is started by taking the steps above.

To set the EVR Adjust mode, connect the checkpoint array pin(B6)and GND with a jumper wire in addition to the above.

10-1-2. Display on Adjustment Remote Control LCD in Status Display Mode

Note : For category 1 through 4, the same content is displayed on the EVF screen and monitor screen (when the data screen is turned on).



①…… A minus (−) segment blinks to indicate that the service mode has been started.

②…… Indicates a service mode category.

③…… Displays a battery voltage, LAST EMG, PRESENT EMG, and MODE SW CODE depending on each category.

Fig. 10-1.

10-1-3. Category Selection and Display for Each Category

Select your desired category with the FF button of the adjustment remote control. There are four categories available ; their display contents differ respectively.

<table>
<tr><th>Category</th><th colspan="2">Display on LCD (Remote Control/Set)</th></tr>
<tr><td>1</td><td colspan="2">A/D converted value of battery voltage (decimal display)(Note 1)</td></tr>
<tr><td>2</td><td colspan="2">LAST EMG (last error). Refer to “Service Mode Error Display”. (Note 2)</td></tr>
<tr><td>3</td><td colspan="2">PRESENT EMG (present error). Refer to “Service Mode Error Display”. (Note 3)</td></tr>
<tr><td rowspan="9">4</td><td colspan="2">MODE SW CODE (mechanical status)</td></tr>
<tr><td>00 : 00</td><td>EJECT</td></tr>
<tr><td>00 : 01</td><td>I.A</td></tr>
<tr><td>00 : 02</td><td>UNLOAD</td></tr>
<tr><td>00 : 03</td><td>I.B</td></tr>
<tr><td>00 : 04</td><td>STOP (threading completed)</td></tr>
<tr><td>00 : 05</td><td>I.C</td></tr>
<tr><td>00 : 06</td><td>RP(REC, PB, FF, REW, CUE, REVIEW, PAUSE)</td></tr>
<tr><td>00 : AA</td><td>Mode switch error</td></tr>
</table>

Note 1 : A value proportional to the battery voltage is displayed.

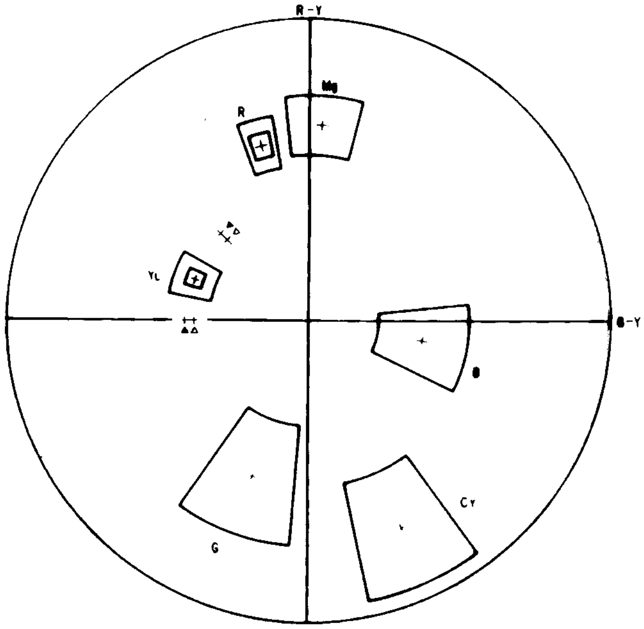
Note 2 : The last error is displayed.

Note 3 : When multiple errors occurred while using the set, they are dispalyed sequentially by pressing the FF (EVR No. NEXT) key.

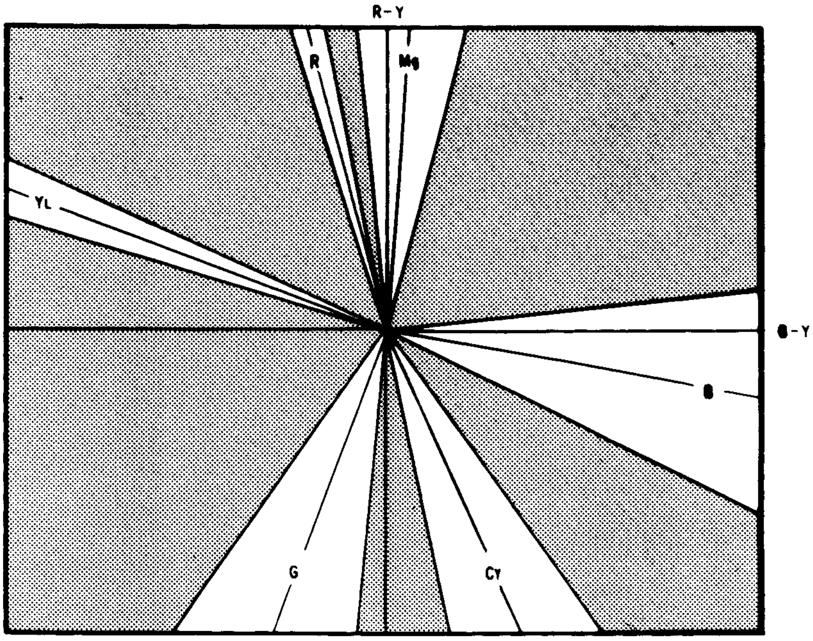
[Service Mode Error Display]

Error	PRESENT EMG Display	LAST EMG Display
No error	00 : 00	00 : 00
Loading motor	00 : 01	00 : 01
REEL FG error at unthreading time	00 : 02	00 : 02
REEL FG error at non-unthreading time	00 : 03	00 : 03
Capstan error	00 : 04	00 : 04
DRUM PG error at drum start time (0)	00 : 05	00 : 05
DRUM PG error at drum start time (1)	01 : 05	01 : 05
DRUM PG error at drum start time (2)	02 : 05	02 : 05
No DRUM PG at drum start time (0)	00 : 06	00 : 06
No DRUM PG at drum start time (1)	01 : 06	01 : 06
No DRUM PG at drum start time (2)	02 : 06	02 : 06
DRUM FG error at drum stationary time (0)	00 : 07	00 : 07
DRUM FG error at drum stationary time (1)	01 : 07	01 : 07
DRUM FG error at drum stationary time (2)	02 : 07	02 : 07
No DRUM PG at drum stationary time (0)	00 : 08	00 : 08
No DRUM PG at drum stationary time (1)	01 : 08	01 : 08
No DRUM PG at drum stationary time (2)	02 : 08	02 : 08
Phase error at drum stationary time (0)	00 : 09	00 : 09

(1) : At tape threading time
(2) : At tape unthreading time
(0) : Others


R-Y
Mg
R
YL
B-Y
B
CY
G

For Vectorscope


R-Y
R
Mg
YL
B-Y
B
G
CY

For Oscilloscope

10-1-4. Cancelling the Service Mode

The service mode is cancelled by shifting the HOLD switch of the adjustment remote control back to the NORMAL position or disconnecting the adjustment remote control from the REMOTE terminal.

[Test Mode]

This equipment has three test modes. They are started by connecting each CN096 terminal of the FC-20P board with a diode (1SS119 or its equivalent).

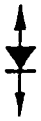
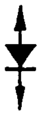
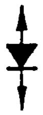
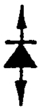
Test Mode	Connection of FC-20P Board CN096	Function
1	Pin ③ (K IN 4)  Pin ② (K OUT 6)	1. A switching position can be adjusted. 2. Error detection is prohibited.
2	Pin ① (K IN5)  Pin ② (K OUT 6)	1. For CH1′ playback frequency characteristic adjustment (at playback time) 2. A battery voltage A/D converted value is displayed on the LCD. (at record time) (same as in the service mode category 1)
3	Pin ③ (K IN 4)  Pin ② (K OUT 6)  Pin ① (K IN 5)	1. Track shift at tape path adjustment time

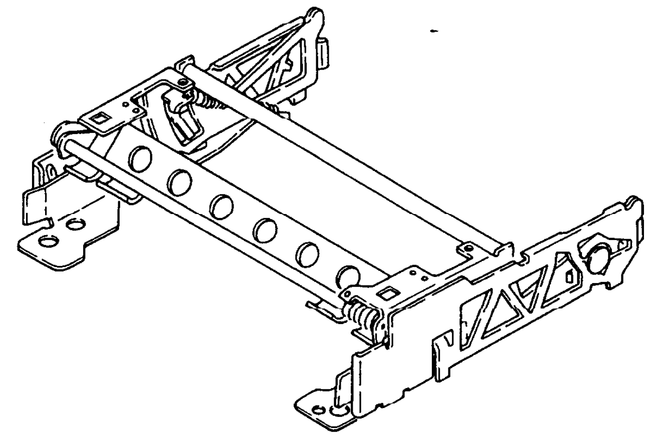
Fig. 10-2.

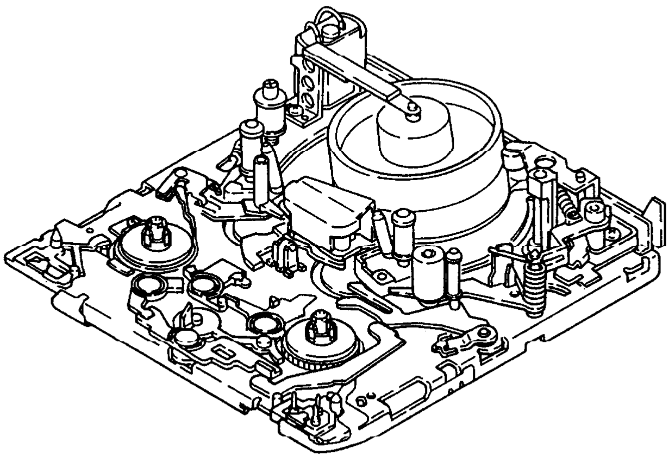
mm Video MECHANICAL ADJUSTMENT MANUAL III

U MECHANISM

Video 8

Please use in conjunction with the SERVICE MANUAL.





8 MECHANISM DECK

SONY®

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1. PREPARATIONS FOR MECHANICAL BLOCK CHECK, ADJUSTMENT AND REPLACEMENT

Note: For removal of the cabinet, the boards, the cassette compartment, etc., refer to the service guides.

1-1. OPERATION WITHOUT CASSETTE COMPARTMENT ASSEMBLY AND TAPE

Note: The unit will not work if exposed to a strong light.

1-1-1. How to Trigger the Loading Operation (See Fig. 1-1.)

1) Supply power to the unit after removing the cabinet, the camera block, the cassette compartment assembly, etc., as indicated in the service guides. (This will enable operation of the mechanical deck.)
2) Cover the LED assembly with an opaque cap, etc. ❶.
3) Attach a piece of tape to the RECOG switch ❷ so that the pin is held down.
4) Push the EJECT lever ❸ in the direction of the arrow Ⓐ.

1-1-2. Setting the Playback Mode (See Fig. 1-1.)

1) Follow the procedures in section 1-1-1. above.
2) Put the rubber band ❹ around the S and T reels.
3) Press the PLAY switch of unit, then push the tension regulator arm assembly ❺ in the direction of the arrow Ⓑ when the T reel starts to rotate (the tension regulator band will be released, and the S reel will start rotating).
4) To stop operation, press the STOP switch.

1-1-3. Eject Operation (See Fig. 1-1.)

1) To eject, turn the EJECT switch on.

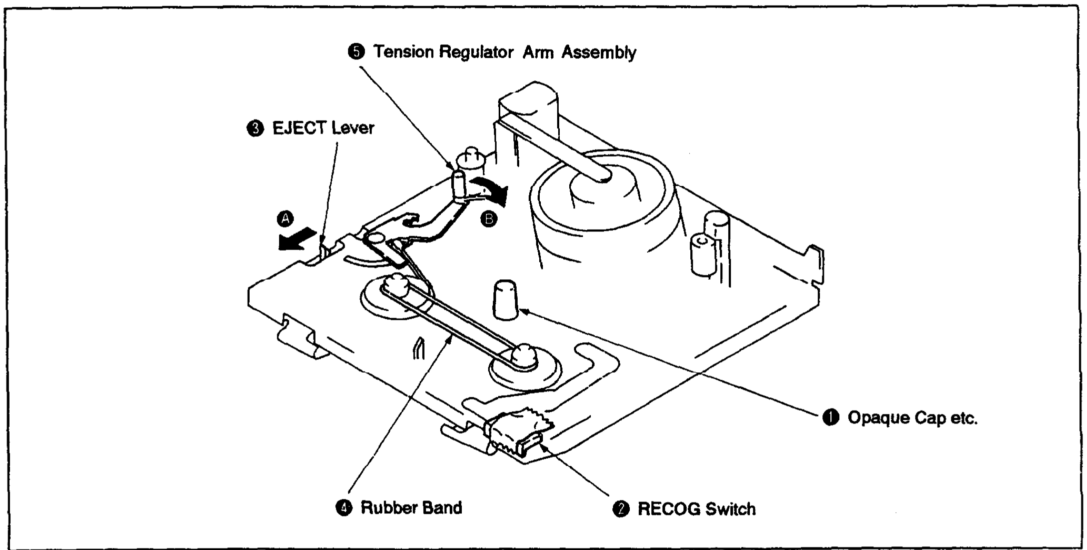


Fig. 1-1.

1-2. THE MODE SELECTOR

1-2-1. Name of Each Part (external) (See Fig. 1-2.)

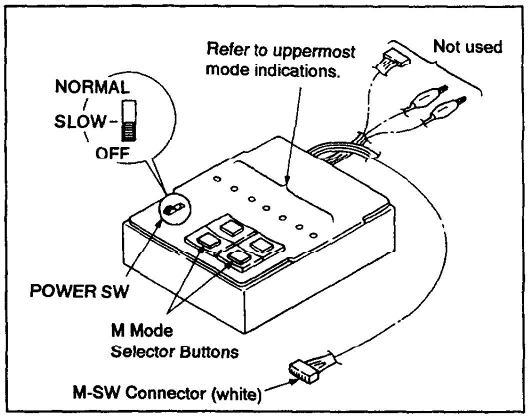

Refer to uppermost mode indications.
Not used
NORMAL
SLOW
OFF
POWER SW
M Mode Selector Buttons
M-SW Connector (white)

Fig. 1-2.

1-2-2. Connections (See Fig. 1-3.)

1) Mount the MODE SELECTOR III panel (Ref. No. J-9) ❶ onto the mode selector.
2) Attach the conversion connector (Ref. No. J-8) ❸ of MODE SELECTOR III to the 6-pin connector (white) ❷ of the mode selector M-SW.
3) Remove the FP-89 flexible board ❺ from the flexible connector ❹.
4) Attach the FP-89 flexible board ❺ to the flexible connector ❻ of the MODE SELECTOR III conversion connector ❸, then attach the 2-pin connector (white) ❽ of the loading motor to the 2-pin connector (white) ❼.

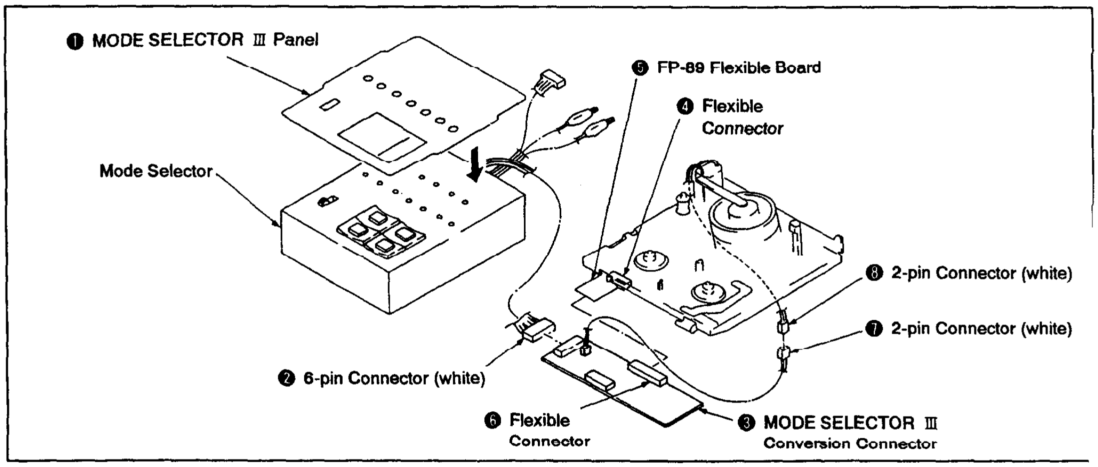

❶ MODE SELECTOR Ⅲ Panel
Mode Selector
❺ FP-89 Flexible Board
❹ Flexible Connector
❽ 2-pin Connector (white)
❼ 2-pin Connector (white)
❷ 6-pin Connector (white)
❻ Flexible Connector
❸ MODE SELECTOR Ⅲ Conversion Connector

Fig. 1-3.

1-2-3. Handling (See Figs. 1-2. and 1-4.)

- Use only the M mode selector buttons.
- Refer to mode indications on the uppermost part of the MODE SELECTOR III panel.
- If the right M mode selector button is kept pressed, the lit indication will change in the order of EJECT → (IA) → ULD → (IB) → STOP → (IC) → FWD.
- To change modes in the reverse direction (from FWD to EJECT), press the left selector button.

Note: For this U mechanism, the uppermost indicators on the MODE SELECTOR III panel are used. The IA, IB and IC indications light up during mode changes.

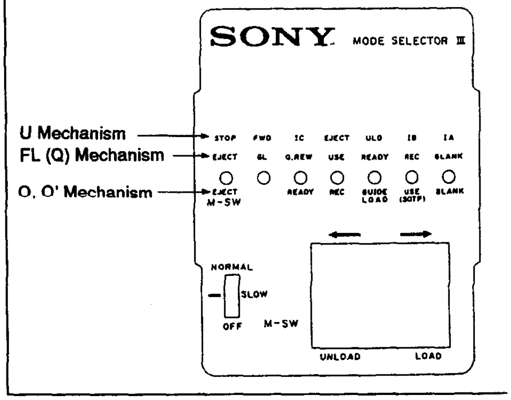

SONY MODE SELECTOR Ⅲ
U Mechanism
FL (Q) Mechanism
O, O' Mechanism
STOP
FWD
IC
EJECT
ULD
IB
IA
EJECT
GL
Q.REW
USE
READY
REC
BLANK
EJECT
M-SW
READY
REC
GUIDE LOAD
USE (SOTP)
BLANK
NORMAL
SLOW
OFF
M-SW
UNLOAD
LOAD

Fig. 1-4.

2. PERIODICAL CHECK AND MAINTENANCE (See Fig. 2-1.)

The following periodical check and maintenance procedures are necessary to ensure proper operation and to protect the tapes as well as the unit, and the following maintenance procedures must be always carried out after repairing regardless of how long the unit has been used.

2-1. ROTARY DRUM ASSEMBLY CLEANING

1) While pressing a piece of chamois leather (Ref. No. J-2) moistened in cleaning fluid (Ref. No. J-1) lightly against the rotary drum, turn the rotary upper drum slowly counter-clockwise with your fingers.

Note: Do not drive the drum with the motor, and do not turn it clockwise.
Do not move the chamois leather vertically against the head tip; this can damage the head tip. Strictly follow the cleaning instructions above.

2-2. TAPE PATH CLEANING

1) Set the cassette compartment assembly to the eject state, or remove it. Then clean the tape path (guides No. 1 to 7, capstan shaft, pinch rollers) with a piece of chamois leather moistened in cleaning fluid (See Fig. 2-1).

2-3. DRIVE SYSTEM CLEANING

1) Clean the drive system (timing belt, reel table surface) with a piece of cloth moistened in cleaning fluid.

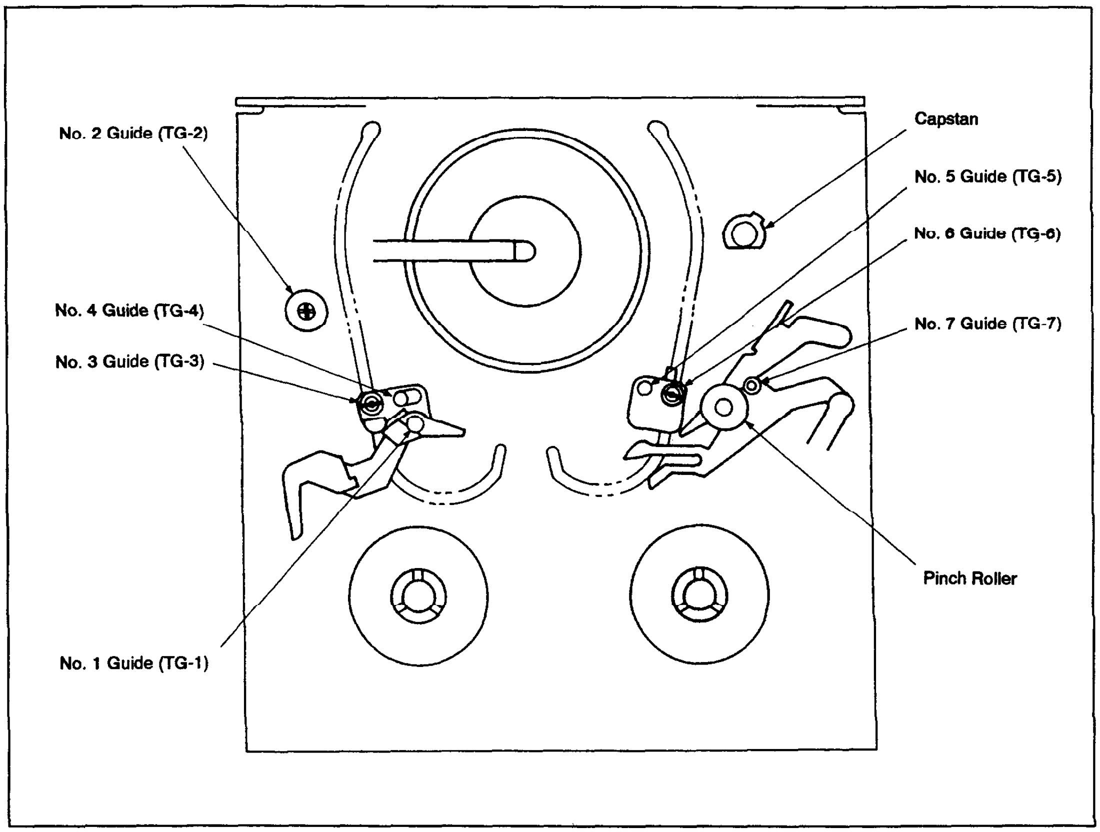


Fig. 2-1.

2-4. PERIODICAL CHECK ITEMS

○ Cleaning ◎ Lubrication ☆ Check

Maintenance and Check Item		Operation time (H)										Remarks
		500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	
Cleaning and Demag-netizing	Tape path surfaces Cleaning	○	○	○	○	○	○	○	○	○	○	Do not oil.
	Rotary drum assembly cleaning and demagnetizing	○	○	○	○	○	○	○	○	○	○	Do not oil.
Drive System	Relay belt (short)	–	☆	–	☆	–	☆	–	☆	–	☆	3-728-866-01
	Relay belt (long)	–	☆	–	☆	–	☆	–	☆	–	☆	3-728-865-01
	Capstan shaft	–	◎	–	◎	–	◎	–	◎	–	◎	Take care that no oil gets on tape path surfaces.
	Idler pulley axle	–	◎	–	◎	–	◎	–	◎	–	◎	
	Loading motor	–	☆	–	☆	–	☆	–	☆	–	☆	1-541-612-11
Perfor-mance Check	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	–	☆	–	☆	–	☆	–	☆	–	☆	
	Brake system	–	☆	–	☆	–	☆	–	☆	–	☆	
	FWD, RVS torque measurement	–	☆	–	☆	–	☆	–	☆	–	☆	

Notes: When overhauling the unit, perform parts replacement referring to the table above.

Regarding Oil:

- Always use the specified oil (using oil of different viscosity, etc. can cause troubles of several kinds).
  Specified oil: Part No. 7-661-018-01
  (Mitsubishi Diamond Oil Hydrofluid EP56)
- Be sure that no dirt is mixed in the oil to be used on axle bearings. Use of dirty oil can result in bearing wear and burning.
- By "one drop of oil" is meant the quantity of oil adhering to the end of a a 2mm-diameter rod as shown in Fig. 2-2.

On grease:

- Use the specified grease.
  Grease: Part No. 7-662-010-08
  (Sony grease SGL-701)

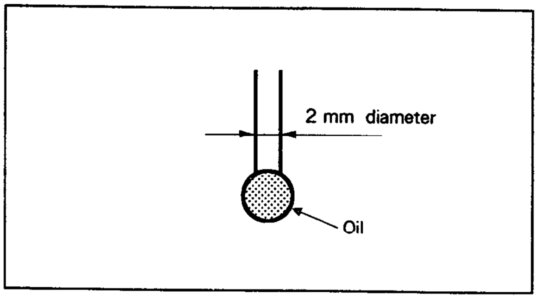


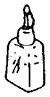
Fig. 2-2.

2-5. SERVICING TOOLS

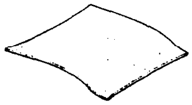
Ref. No.	Name	Part Code	Marking	Application, etc.
J-1	Cleaning fluid	Y-2031-001-0	–	
J-2	Chamois cloth	2-034-697-00	–	
J-3	Head demagnetizer	Commercially available	–	
J-4	Dental mirror Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-5	Alignment tape NTSC (WR5-1N) PAL (WR5-1C)	8-967-995-01 8-967-995-06		Tape path
J-6	FWD/RVS takeup torque cassette	J-6080-624-A	GD-2086	
J-7	Rotary drum jig	(Attached to the maintenance rotary upper drum)		
J-8	Mode selector III conversion connector	J-6082-021-A		General
J-9	Mode selector III panel	J-6082-023-A		General
J-10	Mode selector	J-6080-825-A		General
J-11	Hexagonal wrench detection (0.89 mm) or L wrench (0.89 mm)	7-700-766-01 7-700-736-06		Tape path
J-12	Sony grease (SGL-701)	7-662-010-08		

Other devices: Oscilloscope
Analog tester (20 kΩ)

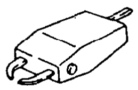
J-1



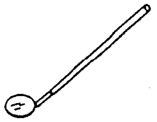
J-2



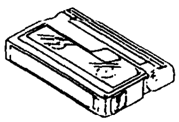
J-3



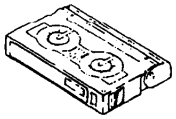
J-4



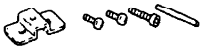
J-5



J-6

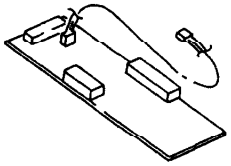


J-7

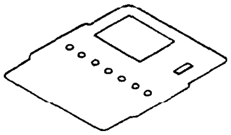


(Attached to the maintenance rotary upper drum)

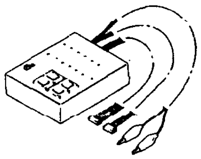
J-8



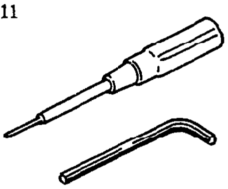
J-9



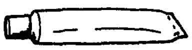
J-10



J-11



J-12



3. MECHANICAL BLOCK CHECK, ADJUSTMENT AND REPLACEMENT

Notes:
- Use the mode selector (Ref. No. J-10) for procedures in this chapter.
- Modes within a frame ☐ are those set by pressing the buttons of the mode selector.

3-1. HC ROLLER ASSEMBLY

1. Removal (See Fig. 3-1.)

1) Remove the screw ❶, then remove the HC roller assembly ❷.

2. Installation (See Fig. 3-1.)

1) Align the two dowels ❸ attached to the HC roller assembly ❷ with the two holes ❹ in the mechanism chassis.
2) Secure the HC roller assembly ❷ with the screw ❶.

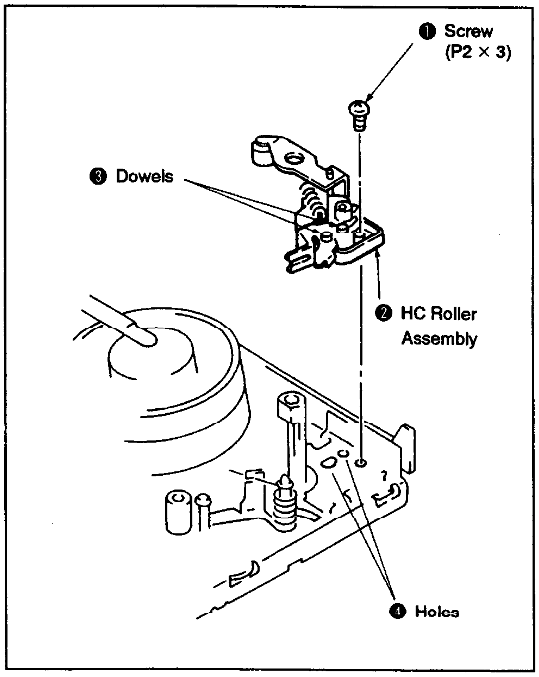

❶ Screw (P2 × 3)
❸ Dowels
❷ HC Roller Assembly
❹ Holes

Fig. 3-1.

3-2. GUIDE GUARD ASSEMBLY

1. Removal (See Fig. 3-2.)

Remove the screw ❶, then remove the guide guard assembly ❷.

2. Installation (See Fig. 3-2.)

1) Align the dowel ❸ attached to the guide guard assembly ❷ with the hole ❹.
2) Secure the guide guard assembly ❷ with the screw ❶.

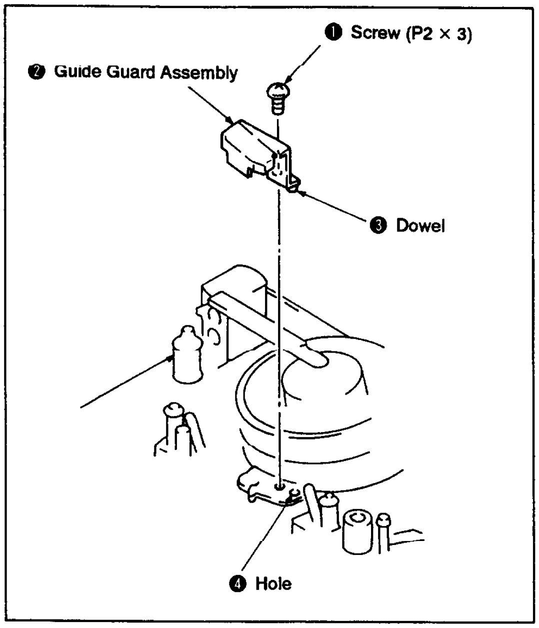

❶ Screw (P2 × 3)
❷ Guide Guard Assembly
❸ Dowel
❹ Hole

Fig. 3-2.

3-3. DC MOTOR (CAPSTAN MOTOR) ASSEMBLY

1. Removal (See Fig. 3-3.)

1) Set the ULD mode.
2) Turn the stopper ❶ in the direction of the arrow Ⓐ as far as it will go.
3) Remove the two screws ❷, then remove the DC motor ❸.

2. Installation (See Fig. 3-3.)

1) Align the two screwed dowels ❹ with the two holes ❺, then engage the toothed part ❻ with the connecting gear ❼.
2) Secure the DC motor assembly ❸ with the two screws ❷.
3) Turn the stopper ❶ in the direction of the arrow Ⓑ as far as it will go.

Note:
- When engaging the gears, take care not to damage their teeth.
- Do not leave any clearance between the DC motor ❸ and the chassis.
- Do not touch the capstan motor axle*, the oil seal* and the rotor*.

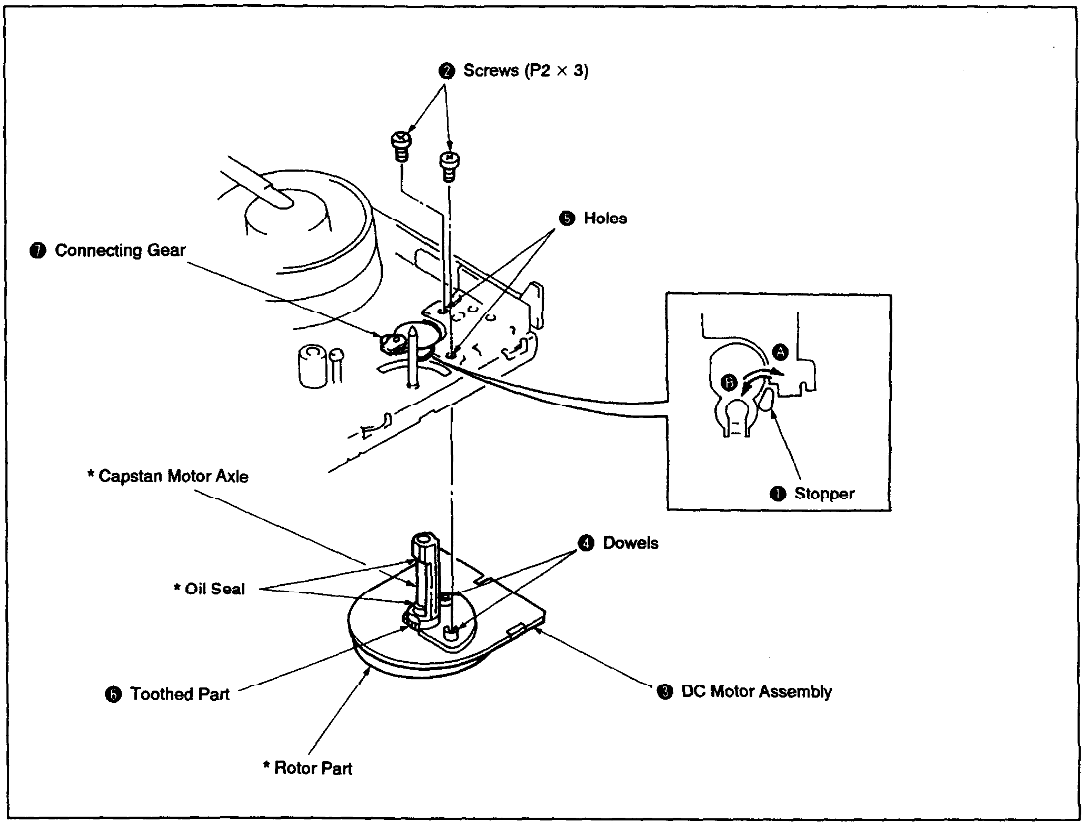

❷ Screws (P2 × 3)
❺ Holes
❼ Connecting Gear
Ⓐ
Ⓑ
❶ Stopper
* Capstan Motor Axle
❹ Dowels
* Oil Seal
❻ Toothed Part
❸ DC Motor Assembly
* Rotor Part

Fig. 3-3.

3-4. S BRAKE, T BRAKE

1. Removal (See Fig. 3-4.)

1) Remove the torsion coil spring (ST) ①.
2) Remove the axle holding pin ②, then remove the T brake ③.
3) Remove the axle holding pin ④, then remove the S brake ⑤.

2. Installation (See Fig. 3-4.)

1) While fitting the toothed part ⑥ into the notch ⑦, mount the S brake ⑤.
2) Insert the axle holding pin ④.
3) Insert the axle ⑧ to the S reel side of the brake release arm ⑨ so that the Ⓐ part comes closer to the drum than part Ⓑ, and mount the T brake ③.
4) Insert the axle holding pin ②.
5) Insert the torsion coil spring (ST) ① below the claw ⑪ of the axle ⑩, then hook it to two claws ⑫.

Note: Confirm that the claws of axle holding pins ② and ④ are not broken before assembling.

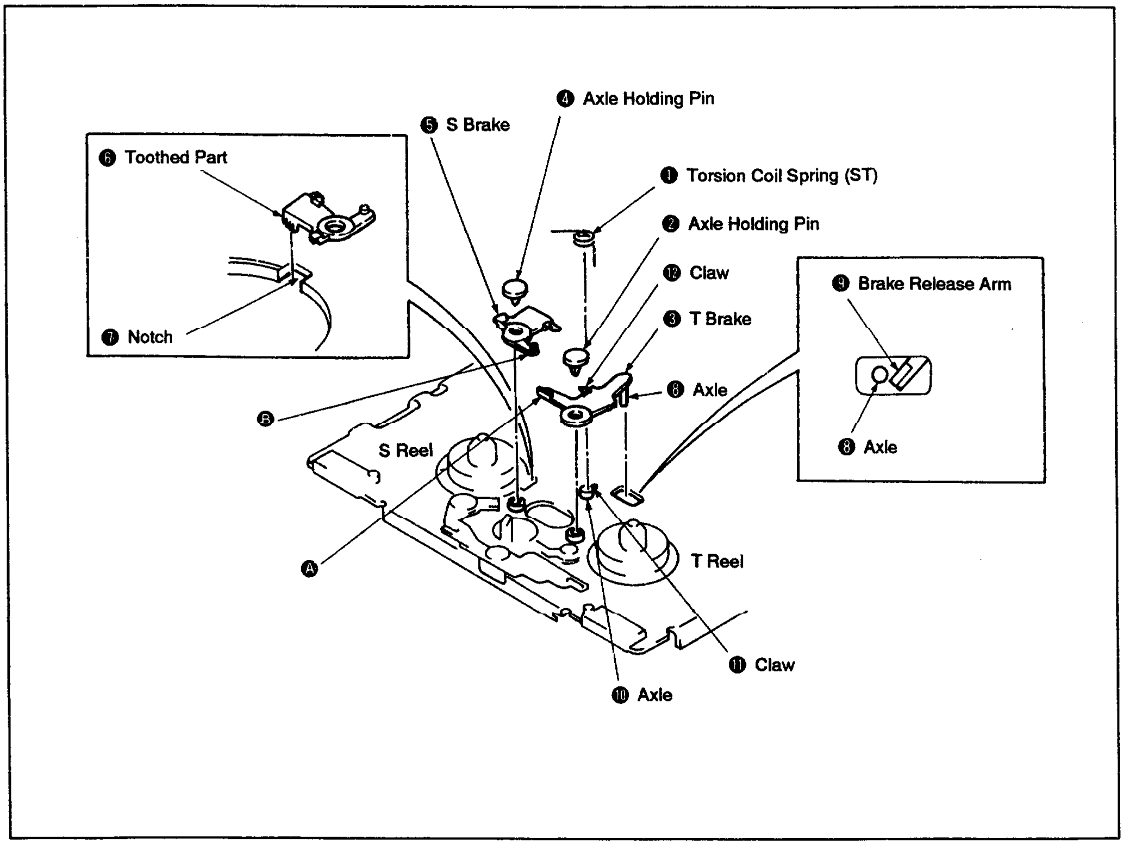

④ Axle Holding Pin
⑤ S Brake
⑥ Toothed Part
① Torsion Coil Spring (ST)
② Axle Holding Pin
⑫ Claw
⑨ Brake Release Arm
③ T Brake
⑦ Notch
⑧ Axle
Ⓑ
S Reel
⑧ Axle
Ⓐ
T Reel
⑪ Claw
⑩ Axle

Fig. 3-4.

3-5. LB BRAKE, AXLE HOLDING PINS

1. Removal (See Fig. 3-5.)

1) Remove the screw ❶, then remove the TL holding plate ❷.
2) Remove the axle holding pin ❸, then remove the LB brake ❹.
3) Remove the axle holding pin ❺, then remove the LB lever ❻.

2. Installation (See Fig. 3-5.)

1) Mount the LB lever ❻ matching it to pin ❼ of the LB gear, then secure it with the axle holding pin ❺.
2) Insert the pin ❽ into the notch ❾ of the LB lever ❻, then mount the LB brake ❹ while inserting the toothed part ❿ into the notch ⓫.
3) Insert the axle holding pin ❸.
4) Align the dowel ⓬ with the hole ⓭, then mount the TL holding plate and secure it with the screw ❶.

Note: Confirm that the claws of axle holding pins ❸ and ❺ are not broken before assembling.

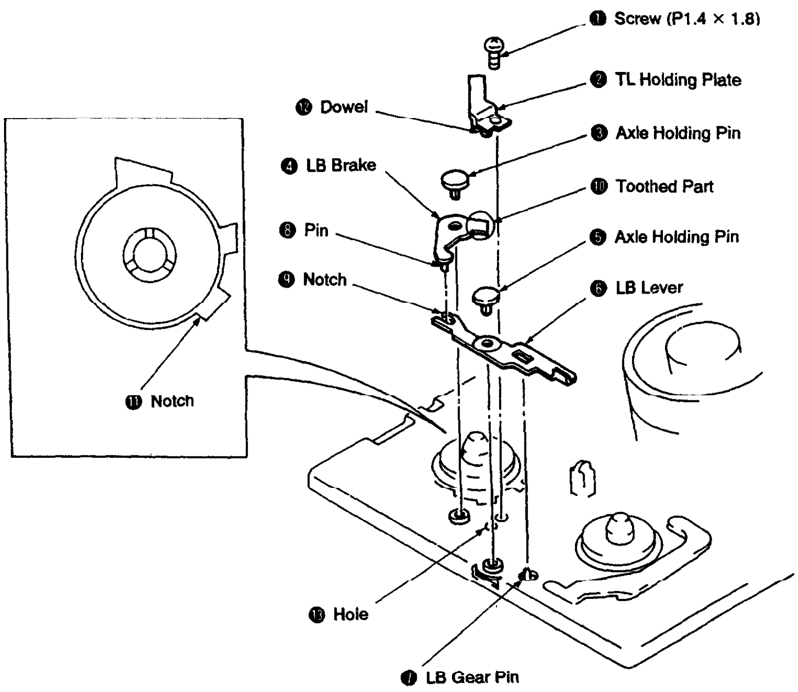

❶ Screw (P1.4 × 1.8)
❷ TL Holding Plate
⓬ Dowel
❸ Axle Holding Pin
❹ LB Brake
❿ Toothed Part
❽ Pin
❺ Axle Holding Pin
❾ Notch
❻ LB Lever
⓫ Notch
⓭ Hole
❼ LB Gear Pin

Fig. 3-5.

3-6. LB RELEASE ARM

1. Removal (See Fig. 3-6.)

1) While pushing the claw ① in the direction of the arrow, remove the LB release arm ②.

2. Installation (See Fig. 3-6.)

1) Fit the LB release arm ② to the axle ③, insert protrusions ⓐ, ⓑ, ⓒ, ⓓ into the three holes ④, then secure with the claw ①.

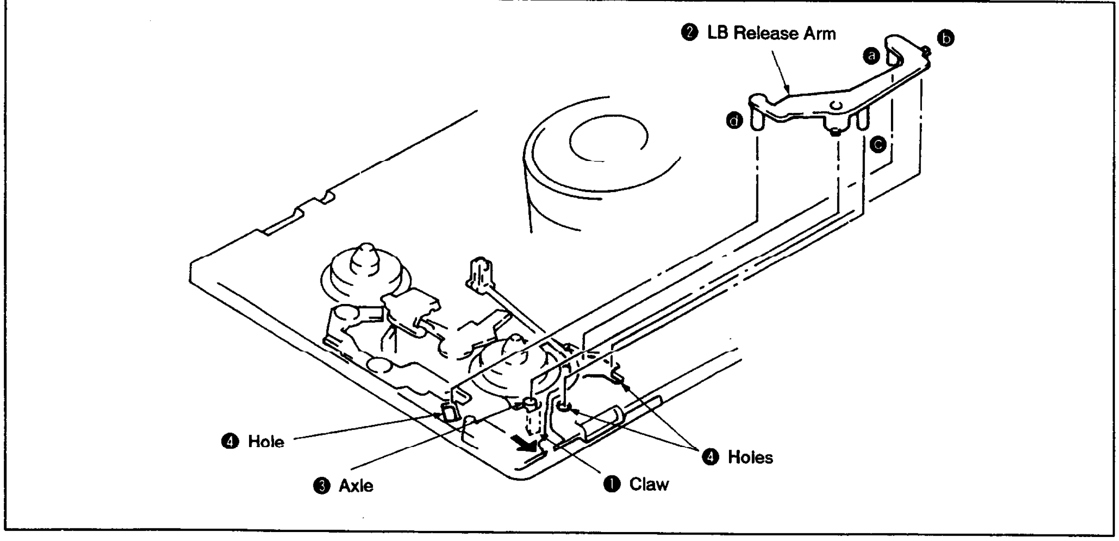

② LB Release Arm
ⓐ
ⓑ
ⓓ
ⓒ
④ Hole
④ Holes
③ Axle
① Claw

Fig. 3-6.

3-7. RK STOPPER, RK STOPPER ARMS

1. Removal (See Fig, 3-7.)

1) Remove the torsion coil spring (RK) ①.
2) Open the chassis claw ②, then remove the RK stopper arm ③.
3) Remove the RK stopper ④.

2. Installation (See Fig. 3-7.)

1) Mount the RK stopper ④ onto the axle ⑤.
2) Mount the RK stopper arm ③ onto the axle ⑥, insert Pin ⑩ into hole ⑪, then hook the claw ② of the chassis to the hole ⑦.
3) Insert the torsion coil spring (RK) ① into the axle ⑤, then hook it to claws ⑧ and ⑨.

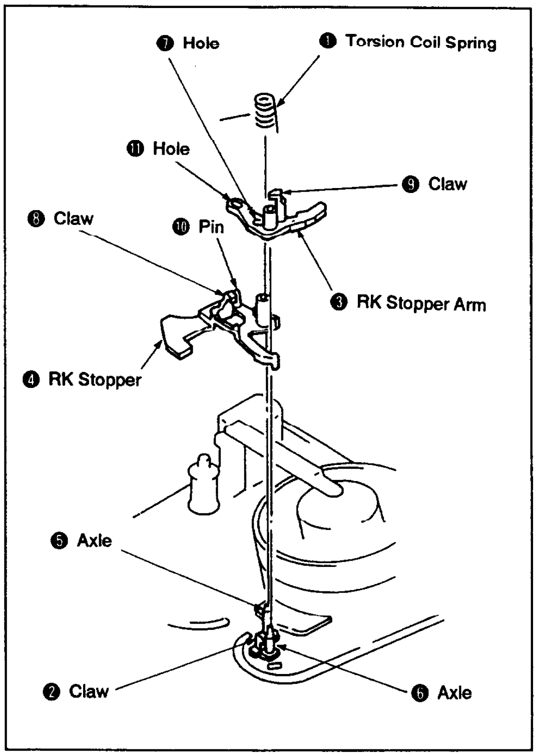

⑦ Hole
① Torsion Coil Spring
⑪ Hole
⑨ Claw
⑧ Claw
⑩ Pin
③ RK Stopper Arm
④ RK Stopper
⑤ Axle
② Claw
⑥ Axle

Fig. 3-7.

3-8. PINCH ARM ASSEMBLY, TG-7 ASSEMBLY

1. Removal (See Fig. 3-8.)

1) Set the $\boxed{\text{IB}}$ mode.
2) Remove the stopper washer ❶, then remove the pinch arm assembly ❷.
3) Bend the claw ❹ inside hole ❸ in the direction of the arrow using a thin screwdriver or the like, then remove the TG-7 plate spring ❺.
4) Remove the TG-7 arm assembly ❻.

2. Installation (See Fig. 3-8.)

1) Grease the inner surfaces of hole ❼ (See Fig. A).
2) Insert the axle ❽ of the TG-7 arm assembly ❻ into the hole ❼.
3) Grease the shaded section 🅐 (See Fig. A).
4) Insert the TG-7 plate spring ❺ into the hole ❸, then secure it with the claw ❹.
5) Apply half a drop of oil to the axle ❾ (See Fig. B).
6) Fit the pinch arm assembly ❷ to the axle ❾ and insert the pinch roller sub arm assembly tab ❿ into the 🅑 part.
7) Install the stopper washer ❶.

Note:
- Take care not to grease the screw ⓫ of the TG-7 arm assembly ❻ (See Fig. A).
- When fitting the pinch arm assembly ❷ to the axle ❾, make sure that it does not touch the TG-7 guide ⓬ or the rubber roller ⓭.
- After assembling, be sure to perform tape path adjustment as described in section 4.

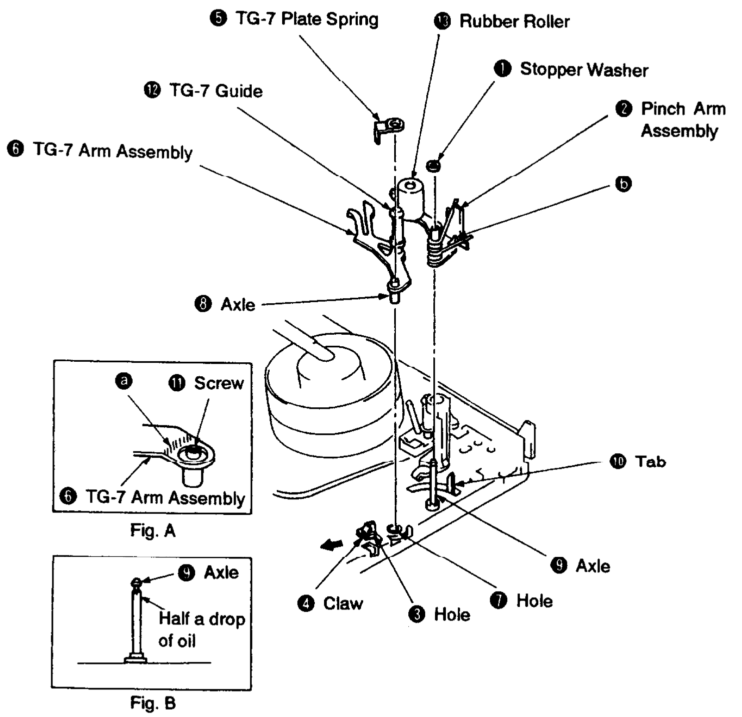

❺ TG-7 Plate Spring
⓭ Rubber Roller
❶ Stopper Washer
⓬ TG-7 Guide
❷ Pinch Arm Assembly
❻ TG-7 Arm Assembly
🅑
❽ Axle
🅐
⓫ Screw
❻ TG-7 Arm Assembly
❿ Tab
❾ Axle
❾ Axle
Half a drop of oil
❹ Claw
❸ Hole
❼ Hole

Fig. A

Fig. B

Fig. 3-8.

3-9. TG-2 ASSEMBLY

1. Removal (See Fig. 3-9.)

1) Remove the TG-2 upper flange assembly ❶.
2) Remove the TG-2 roller ❷, the TG-2 sleeve ❸, the TG-2 lower flange ❹ and the compression spring ❺.

2. Installation (See Fig. 3-9.)

1) Mount the compression spring ❺, the TG-2 lower flange ❹, the TG-2 sleeve ❸ and the TG-2 roller ❷ to the axle.
2) Secure the TG-2 upper flange ❶ to the axle by rotating it 4 to 6 turns.

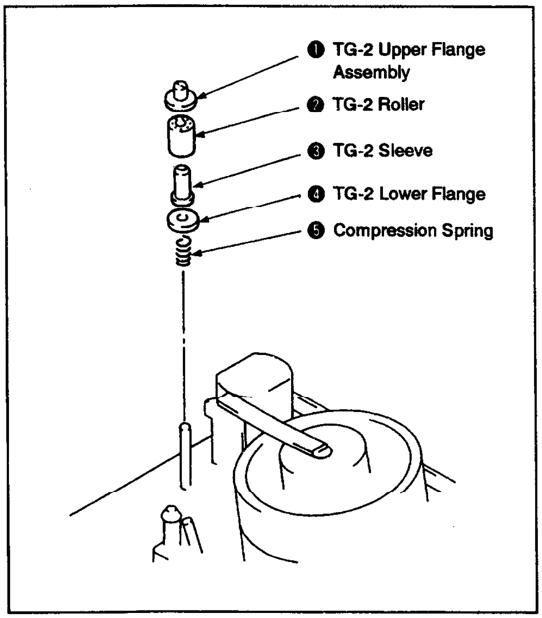

❶ TG-2 Upper Flange Assembly
❷ TG-2 Roller
❸ TG-2 Sleeve
❹ TG-2 Lower Flange
❺ Compression Spring

Fig. 3-9.

3. TG-2 Height Preset (see Fig. 3-10.)

1) Adjust height from the mechanism chassis upper surface to the TG-2 upper flange ❶ upper surface to 18.6 mm by turning the TG-2 upper flange ❶.

Note: After adjustment, be sure to perform tape path adjustment as described in section 4.

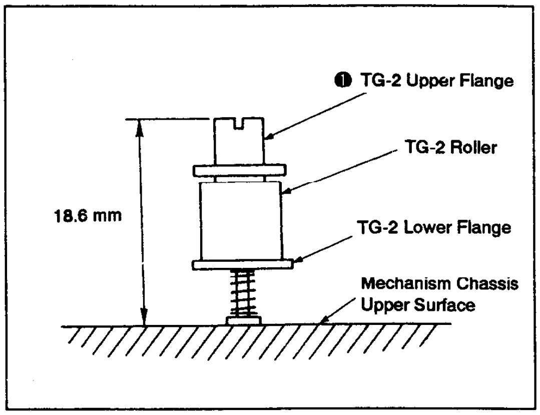

❶ TG-2 Upper Flange
TG-2 Roller
18.6 mm
TG-2 Lower Flange
Mechanism Chassis Upper Surface

Fig. 3-10.

3-10. S REEL TABLE ASSEMBLY, T REEL TABLE ASSEMBLY

1. Removal (See Fig. 3-11.)

1) Remove the S brake and T brake as described in section 3-4.
2) Remove the TL holding plate as described in section 3-5.
3) Remove the tension regulator band assembly as described in section 3-11.
4) Remove the S reel table assembly ❶.
5) Turn the stopper ❷ approx. 90 ° in the direction of the arrow 🅐.
6) While sliding the LB release arm ❸ in the direction of the arrow 🅑, remove the T reel table assembly ❹.

2. Installation (See Fig. 3-11.)

1) Apply half a drop of oil to the axle ❺ (See Fig. A).
2) Move the RK gear ❻ in the direction of the arrow 🅒 and the TS brake ❼ in the direction of the arrow 🅓, putting them out of the way.
3) While sliding the LB release arm ❸ in the direction of the arrow 🅑, mount the T reel table assembly ❹ onto the axle ❺, then turn the stopper ❷ in the direction of the arrow 🅔 as far as it will go.
4) Apply half a drop of oil to the axle ❽ (See Fig. B).
5) Move the RK gear ❻ in the direction of the arrow 🅕, the UL brake ❾ in the direction of the arrow 🅖 and the LB brake ❿ in the direction of the arrow 🅗, putting them out of the way.
6) Mount the S reel table ❶ onto the axle ❽.
7) Mount the tension regulator band assembly as described in section 3-11.
8) Mount the TL holding plate as described in section 3-5.
9) Mount the S brake and T brake assemblies as described in section 3-4.

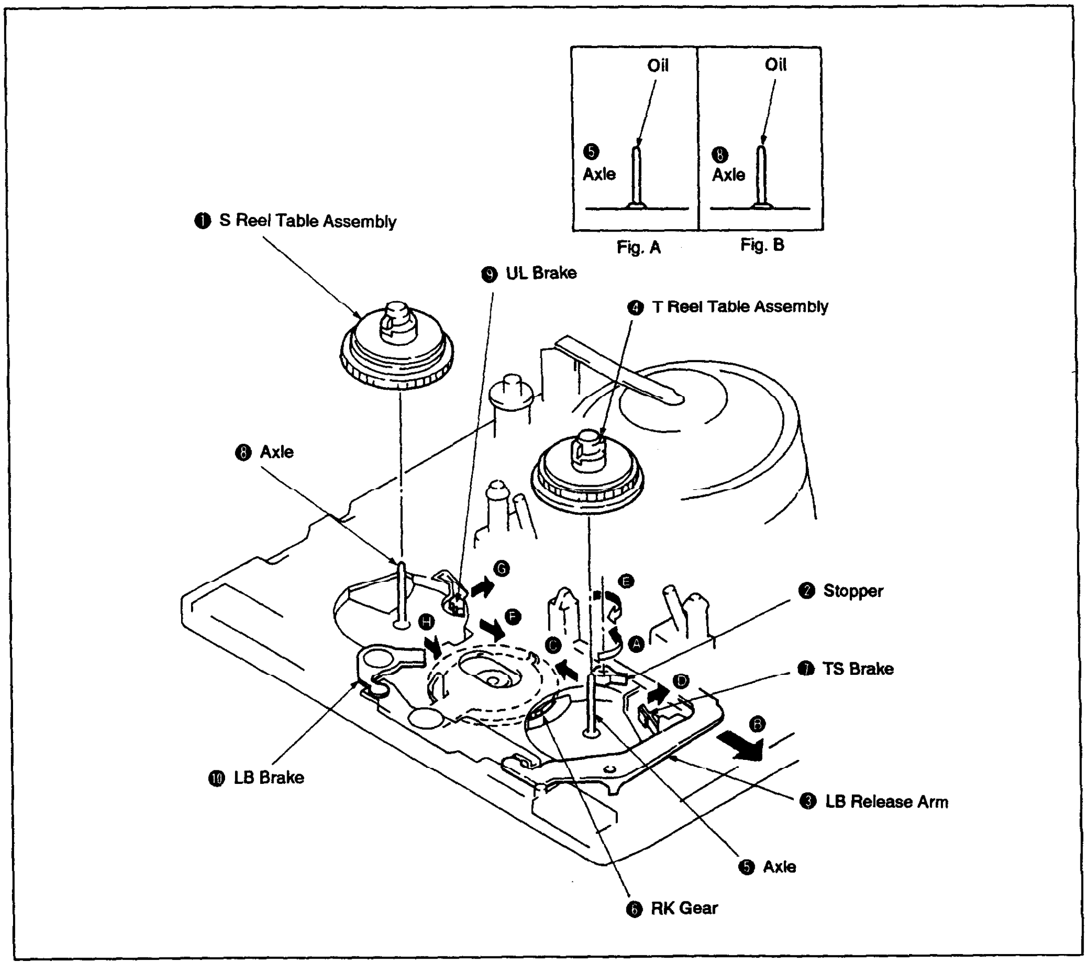

Oil
❺ Axle
Fig. A
Oil
❽ Axle
Fig. B
❶ S Reel Table Assembly
❾ UL Brake
❹ T Reel Table Assembly
❽ Axle
🅖
🅕
🅗
🅔
🅒
🅐
🅓
❷ Stopper
❼ TS Brake
🅑
❿ LB Brake
❸ LB Release Arm
❺ Axle
❻ RK Gear

Fig. 3-11.

3-11. TENSION REGULATOR BAND ASSEMBLY, TENSION REGULATOR ARM ASSEMBLY

1. Removal (See Fig. 3-12.)

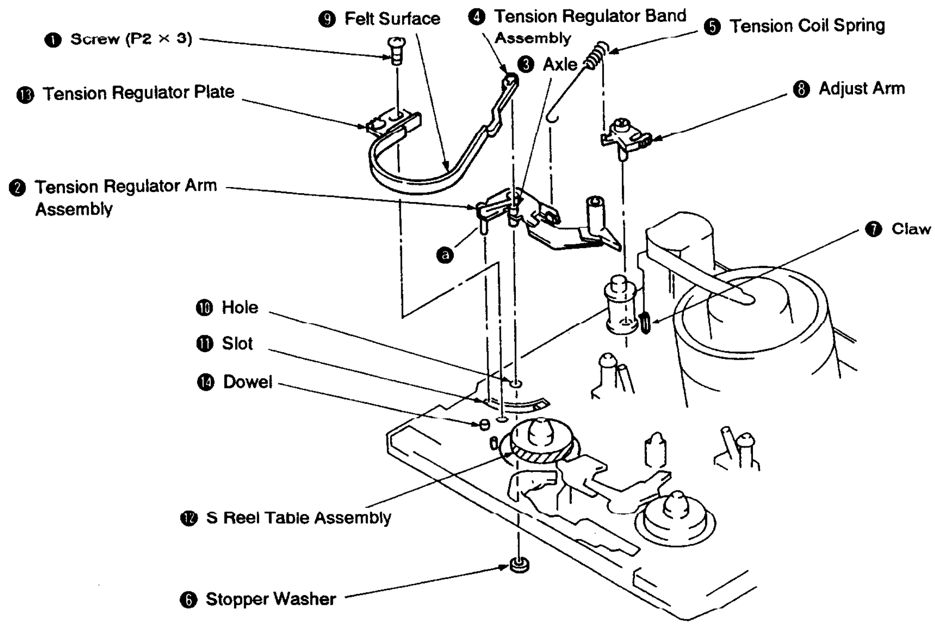
1) Remove the TL holding plate as described in section 3-5.
2) Remove the screw ❶.
3) Using a thin screwdriver or the like, remove the tension regulator band assembly ❹ from the axle ❸ of tension regulator arm assembly ❷.
4) Remove the tension spring ❺.
5) Remove the stopper washer ❻ from the back of the mechanism chassis, then remove the tension regulator arm assembly ❷.
6) Open the claw ❼, then remove the adjust arm ❽.

Note: When removing the tension regulator band assembly ❹, take care not to twist or bend it, and not to touch the felt surface ❾.

2. Installation (See Fig. 3-12.)

1) Engage the adjust arm ❽ in the position shown in Fig. A, then close the claw ❼.
2) Apply half a drop of oil to the hole ❿.
3) Mount the tension regulator arm assembly ❷, then insert it into the slot ⓫ so that the ⓐ part comes to the arrow Ⓐ side of the switch lever assembly (See Fig. B).
4) While holding the tension regulator arm assembly ❷ from the mechanism chassis front, secure it with the stopper washer ❻ from the back.
5) Hook the R hook of the tension spring ❻ to the adjust arm ❽ as shown in the figure, then hook the opposite end to the tension regulator arm assembly ❷.
6) Mount the tension regulator band assembly ❹ onto the axle ❸ of tension regulator arm assembly ❷, and place it so that the felt surface ❾ comes against the shaded portion of the S reel table assembly ⓬.
7) Mount the tension regulator plate ⓭ of the tension regulator band assembly ❹ so that it is aligned with the dowel ⓮ of the mechanism chassis, then secure it temporarily with the screw ❶.
8) Mount the TL holding plate as described in section 3-5.
9) Adjust tension regulator FWD position as described in section 3-12.
10) Perform adjust arm adjustment as described in section 3-22.

Note: When mounting the tension regulator band assembly ❷, take care not to twist or bend it, and not to touch the felt surface ❾.


❶ Screw (P2 × 3)
❾ Felt Surface
❹ Tension Regulator Band Assembly
❺ Tension Coil Spring
❸ Axle
⓭ Tension Regulator Plate
❽ Adjust Arm
❷ Tension Regulator Arm Assembly
❼ Claw
ⓐ
❿ Hole
⓫ Slot
⓮ Dowel
⓬ S Reel Table Assembly
❻ Stopper Washer

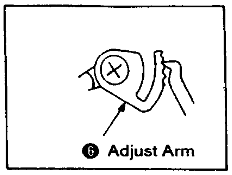

❽ Adjust Arm

Fig. A

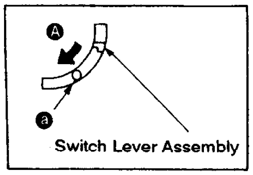

Ⓐ
ⓐ
Switch Lever Assembly

Fig. B

Fig. 3-12.

3-12. TENSION REGULATOR FWD POSITION PRESET (See Fig. 3-13.)

1) Load a cassette tape and set the $\boxed{\text{FWD}}$ mode.
2) Confirm whether the distance between ⓐ part of the tension regulator arm ❶ and the groove ❷ of the chassis is 1.1 ± 0.3 mm. If this distance is not within the specified range, remove the cassette tape and perform the following adjustment.
3) Loosen the fixing screw ❹ of the tension regulator band assembly ❸.
4) Slide the tension regulator plate ❺ in the direction of the arrow Ⓐ if the measured distance is over the specified range, and in the direction of the arrow Ⓑ if it is under that range. Then, fix it with the screw ❹.
5) Repeat steps 1) and 2) and confirm that the distance is within the specified range.

Note: Use a cassette with the tape advanced halfway.

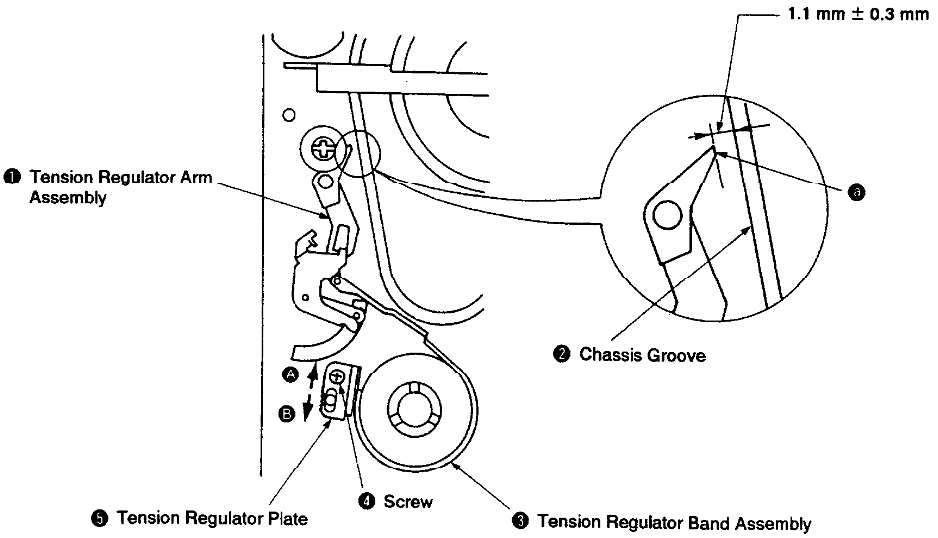

1.1 mm ± 0.3 mm
❶ Tension Regulator Arm Assembly
ⓐ
❷ Chassis Groove
Ⓐ
Ⓑ
❹ Screw
❺ Tension Regulator Plate
❸ Tension Regulator Band Assembly

Fig. 3-13.

3-13. DRUM ASSEMBLY, DEW SENSOR

1. Removal (See Fig. 3-14.)

1) Set the EJECT mode.
2) Remove the flexible board ❶ and the two connectors ❷.
3) Remove the guide guard assembly as described in section 3-2.
4) Remove the screw ❸, then remove the axle ground terminal ❹.
5) Remove the three screws ❺, then remove the drum assembly ❻ from the mechanism chassis.
6) Remove the connector ❿
7) Remove the screw ❼, then remove the dew sensor ❽.

Note:
- When removing the drum assembly ❻ from the mechanism chassis, take care not to cut the flexible board ❶ or the harness.
- Take care not to touch the head tip ❾.

2. Installation (See Fig. 3-14.)

1) Insert part ⓐ of the dew sensor ❽ into the notch ⓫ of the mechanism chassis, then secure it with the screw ❼.
2) Mount the connector ❿.
3) Clamp the harness ⓯ of the dew sensor ❽ with the reinforcing the claw ⓰ of the plate SS assembly (See Fig. A).
4) Insert the connector ❷ and the flexible board ❶ into the hole ⓬ of the mechanism chassis, align the drum assembly ❻ with the two dowels ⓭ and secure it with the three screws ❺.
5) Align the axle ground terminal ❷ with the two dowels ⓮ of the mechanism chassis and secure it with the screw ❸.
6) Mount the guide guard assembly as described in section 3-2.
7) Mount the two connectors ❷ and the flexible board ❶.

Note:
- Take care not to cut the flexible board ❶ or the harness ⓯.
- Take care not to touch the head tip ❾.
- After assembling, be sure to perform Tape Path Adjustment following instructions in section 4.

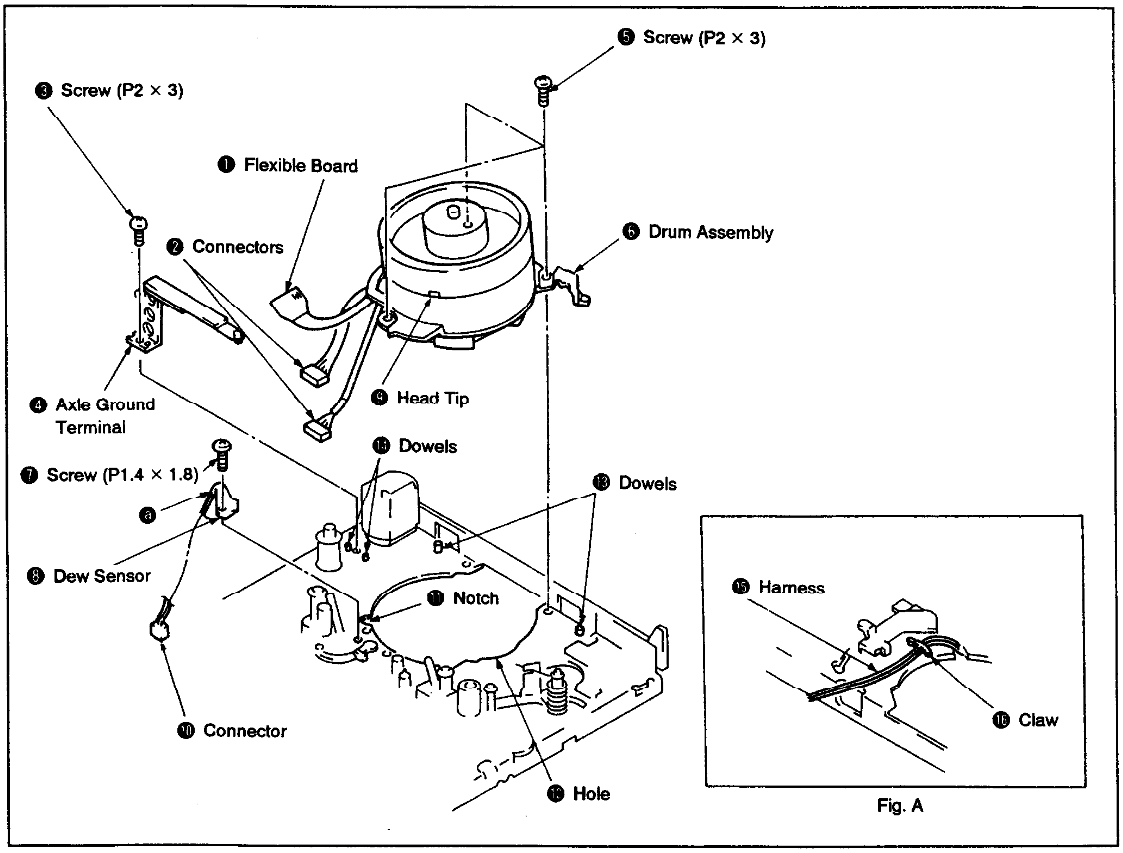

❺ Screw (P2 × 3)
❸ Screw (P2 × 3)
❶ Flexible Board
❷ Connectors
❻ Drum Assembly
❹ Axle Ground Terminal
❾ Head Tip
⓮ Dowels
❼ Screw (P1.4 × 1.8)
ⓐ
⓭ Dowels
❽ Dew Sensor
⓫ Notch
⓯ Harness
⓰ Claw
❿ Connector
⓬ Hole
Fig. A

Fig. 3-14.

3-14. EJECT LEVER, SWITCH LEVER ASSEMBLY, PINCH ROLLER SUB ARM ASSEMBLY

1. Removal (See Fig. 3-15.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Set the STOP mode.
3) Remove the claw ❶, then remove the eject lever ❷.
4) Remove the stopper washer ❸, then remove the switch lever assembly ❹.
5) Remove the pinch roller load spring ❺.
6) Remove the stopper washer ❻, then remove the pinch roller sub arm assembly ❼.

2. Installation (See Fig. 3-15.)

1) Grease the axle ❽ (See Fig. A).
2) Assemble by inserting ⓐ part of the pinch roller sub arm assembly ❼ into the slot ❾, then insert the pin ❿ into the loading lever assembly notch ⓫.
3) Secure with the stopper washer ❻.
4) Mount the pinch roller load spring ❺ by catching its ⓑ end between the claw ⓬ and the chassis side and its ⓒ end to the claw ⓬.
5) Apply half a drop of oil to the axle ⓭ (See Fig. B).
6) Align the groove ⓮ of the switch lever assembly ❹ with the mode detector switch protrusion ⓯, mount it on the axle ⓭, then insert the pin ⓰ into the drive gear (left) assembly ⓱ outer groove.
7) Secure with the stopper washer ❸.
8) Mount the eject lever ❷ and close the claw ❶.
9) Mount the DC motor (capstan motor) as described in section 3-3.

Note: When mounting the switch lever assembly ❹ onto the axle ⓭ with the tension regulator arm assembly installed, set the pin ⓰ to the arrow Ⓐ side of the switch lever assembly ❹.

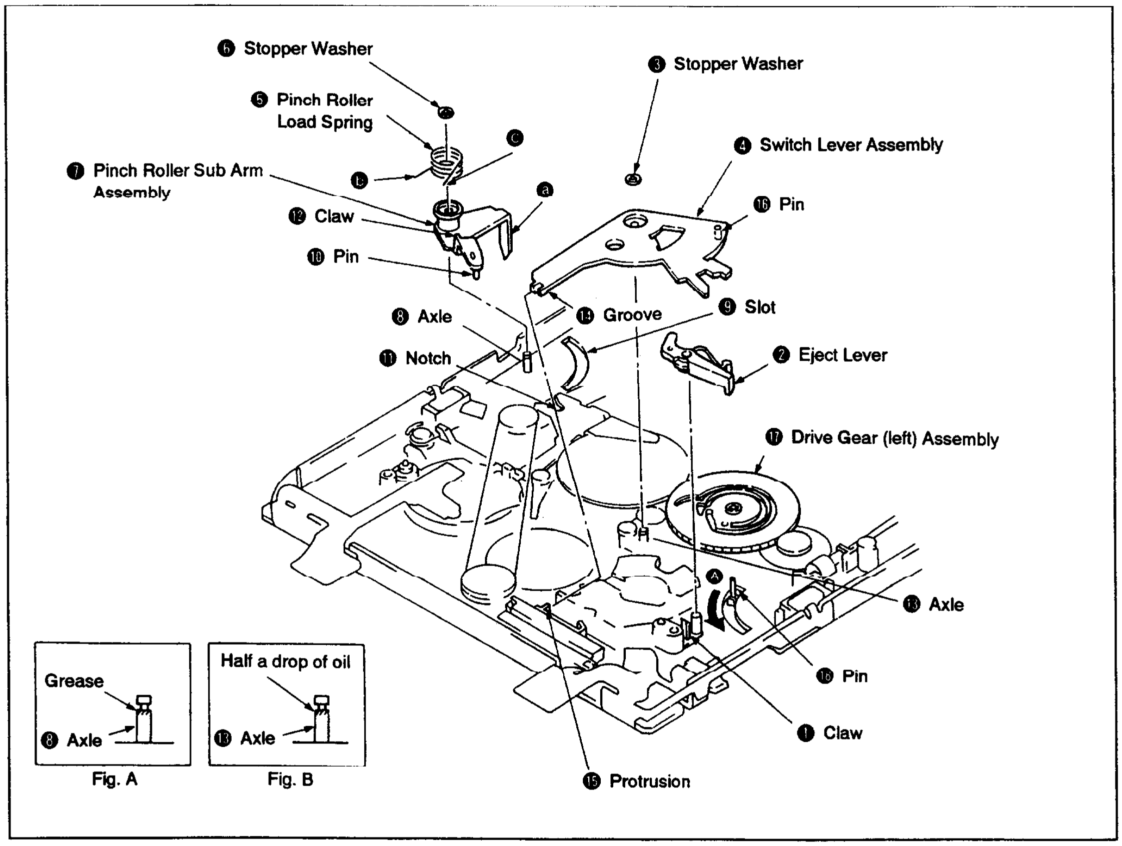

❻ Stopper Washer
❺ Pinch Roller Load Spring
❼ Pinch Roller Sub Arm Assembly
ⓒ
ⓑ
ⓐ
⓬ Claw
❿ Pin
❽ Axle
⓫ Notch
❸ Stopper Washer
❹ Switch Lever Assembly
⓰ Pin
⓮ Groove
❾ Slot
❷ Eject Lever
⓱ Drive Gear (left) Assembly
Ⓐ
⓭ Axle
⓰ Pin
❶ Claw
⓯ Protrusion
Grease
❽ Axle
Half a drop of oil
⓭ Axle

Fig. A

Fig. B

Fig. 3-15.

3-15. TIMING BELT (L) , RC GEAR ASSEMBLY, LOADING LEVER ASSEMBLY, TIMING BELT (S), CONNECTING GEAR ASSEMBLY

1. Removal (See Fig. 3-16.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the pinch roller sub arm assembly as described in section 3-14.
3) Set the STOP mode.
4) Remove the stopper washer ❶ , then remove the RC gear assembly ❷ from the axle ❹ with the timing belt (L) ❸ attached.
5) Remove the timing belt (L) ❸ from the idler pulley assembly ❺.
6) Remove the stopper washer ❻ and remove the loading lever assembly ❽ while pushing the claw ❼ in the direction of the arrow Ⓐ.
7) Turn the stopper ❾ approx. 90 ° in the direction of the arrow Ⓑ.
8) Remove the connecting gear assembly ⓫ from the axle ⓰ with the timing belt (S) ❿ attached.
9) Remove the timing belt (S) ❿ from the idler pulley assembly ❺.

Note: When removing the connecting gear ⓫ , take care not touch the flange section ⓑ.

2. Installation (See Fig. 3-16.)

1) Apply half a drop of oil to the axle ⓰ (See Fig. F).
2) Hook one end of the timing belt (S) ❿ onto the connecting gear assembly ⓫ and the other end onto gear ⓓ of the idler pulley assembly ❺. (Refer to the figure.)
3) Mount the connecting gear assembly ⓫ with the timing belt (S) ❿ attached to the axle ⓰.
4) Turn the stopper ❾ in the direction of the arrow Ⓒ as far as it will go.
5) Apply half a drop of oil to the axle ⓬ (See Fig. A).
6) Fit the loading lever assembly ❽ to the axle ⓬, secure the ⓐ part with the claw ❼ and place the pin ⓭ into the groove of the drive gear (right) assembly ⓮.
7) Install the stopper washer ❻.
8) Place the timing belt (L) ❸ around the gears of the RC gear assembly ❷ indicated in Fig. B, and its opposite side around the gear ⓒ of the idler pulley assembly ❺. (See Fig. E.)
9) Mount the RC gear assembly ❷ onto the axle ❹ with the timing belt (L) ❸ attached, and engage it with the gear of the RK gear assembly ⓯.
10) Install the stopper washer ❶.
11) Grease parts of the loading lever assembly ❽ indicated in Fig. C.
12) Mount the pinch roller sub arm assembly as described in section 3-14.
13) Mount the DC motor (capstan motor) as described in section 3-3.

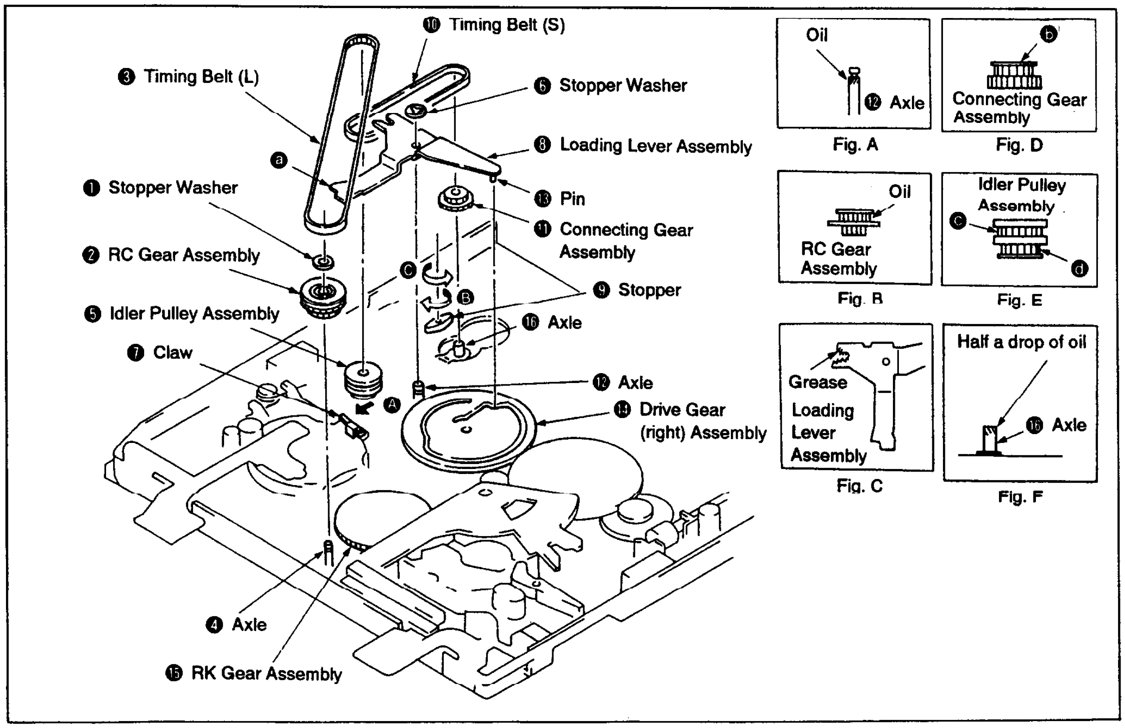

❿ Timing Belt (S)
❸ Timing Belt (L)
❻ Stopper Washer
❽ Loading Lever Assembly
ⓐ
❶ Stopper Washer
⓭ Pin
⓫ Connecting Gear Assembly
❷ RC Gear Assembly
Ⓒ
Ⓑ
❾ Stopper
❺ Idler Pulley Assembly
⓰ Axle
❼ Claw
⓬ Axle
Ⓐ
⓮ Drive Gear (right) Assembly
❹ Axle
⓯ RK Gear Assembly
Oil
⓬ Axle
Fig. A
ⓑ
Connecting Gear Assembly
Fig. D
Oil
RC Gear Assembly
Fig. B
Idler Pulley Assembly
ⓒ
ⓓ
Fig. E
Grease
Loading Lever Assembly
Fig. C
Half a drop of oil
⓰ Axle
Fig. F

Fig. 3-16.

3-16. IDLER PULLEY, TS BRAKE ASSEMBLY, LB GEAR ASSEMBLY, RK GEAR ASSEMBLY

1. Removal (See Fig. 3-17.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the switch lever assembly as described in section 3-14.
3) Remove the timing belt (L), the RC gear assembly, the loading lever assembly, the timing belt (S) and the connecting gear assembly described in section 3-15.
4) Set the STOP mode.
5) Remove the stopper washer ❶, then remove the idler pulley ❷.
6) Open the claw ❸, then remove the TS brake assembly ❹.
7) Remove the torsion coil spring (LB) ❺.
8) Remove the stopper washer ❻, then remove the LB gear assembly ❼.
9) Remove the RK gear assembly ❽.

Note: When removing the idler pulley ❷, take care not to touch the flange section ⓐ. (See Fig. C.)

2. Installation (See Fig. 3-17.)

1) Apply half a drop of oil to the axle ❾ (See Fig. A).
2) Mount the RK gear assembly ❽ onto the axle ❾, keeping it in horizontal position.
3) Apply half a drop of oil to the axle ❿ (See Fig. B).
4) Mount the LB gear assembly ❼ onto the axle ❿ and secure it with the stopper washer ❻.
5) Insert the torsion coil spring (LB) ❺ into the axle ⓫, then hook it to the mechanism chassis notch ⓬ and to the tab ⓭.
6) Mount the TS brake assembly ❹ and close the claw ❸.
7) Apply half a drop of oil to the axle ⓰ (See Fig. D).
8) Mount the idler pulley ❷ onto the axle ⓰, then secure it with the stopper washer ❶.
9) Mount the timing belt (L), the RC gear assembly, the loading lever assembly, the timing belt (S) and the connecting gear assembly as described in section 3-15.
10) Mount the switch lever assembly as described in section 3-14.
11) Mount the DC motor (capstan motor) as described in section 3-3.

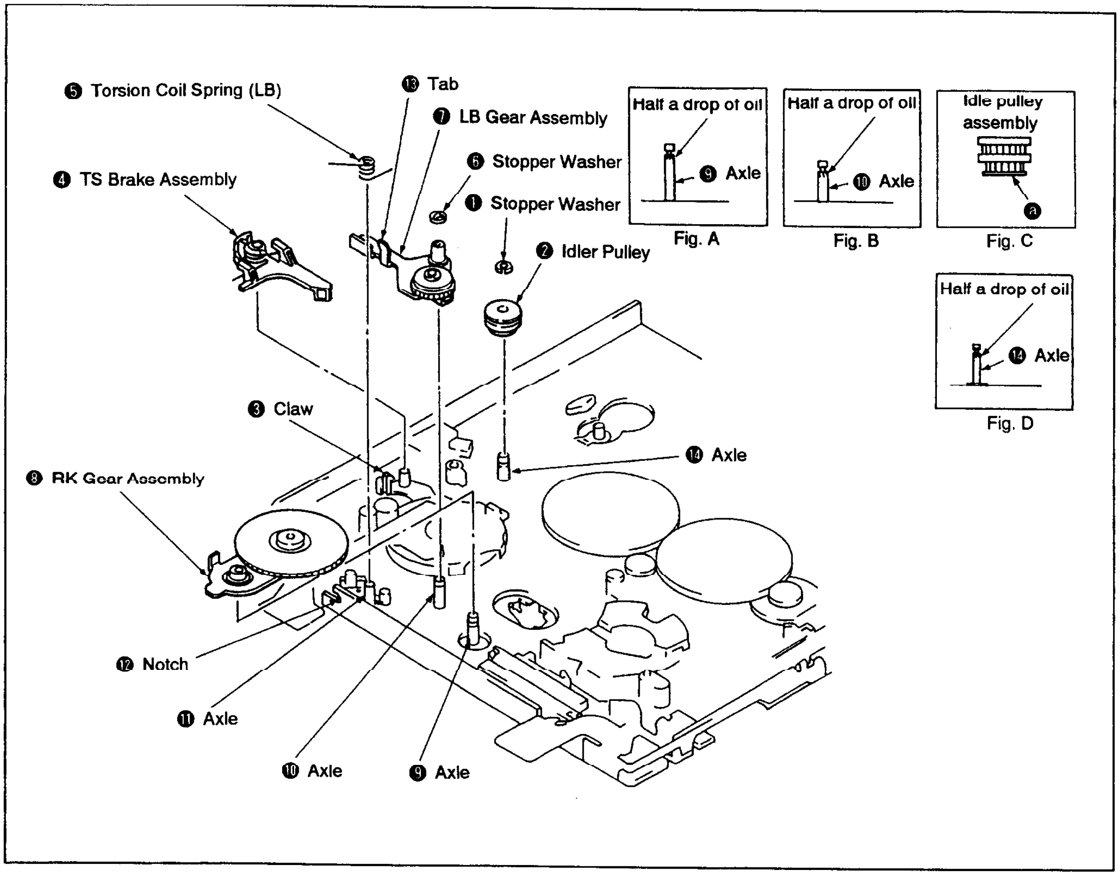

❺ Torsion Coil Spring (LB)
⓭ Tab
❼ LB Gear Assembly
❻ Stopper Washer
❶ Stopper Washer
❹ TS Brake Assembly
❷ Idler Pulley
❸ Claw
⓮ Axle
❽ RK Gear Assembly
⓬ Notch
⓫ Axle
❿ Axle
❾ Axle
Half a drop of oil
❾ Axle
Fig. A
Half a drop of oil
❿ Axle
Fig. B
Idle pulley assembly
ⓐ
Fig. C
Half a drop of oil
⓮ Axle
Fig. D

Fig. 3-17.

3-17. UL GEAR, UL BRAKE, UL ARM, LB PLATE SPRING

1. Removal (See Fig. 3-18.)

1) Remove the switch lever assembly as described in section 3-14.
2) Remove the stopper washer ❶, then remove the UL gear ❷.
3) Remove the UL arm ❸, the 1.6 mm-diameter poly washer ❹ and the LB plate spring ❺.
4) Remove the UL brake ❻.

2. Installation (See Fig. 3-18.)

1) Mount the UL brake ❻.
2) Apply half a drop of oil to the axle ❼ (See Fig. A).
3) Mount the LB plate spring ❺ to the axle ❼ as shown in Fig. B, then install the 1.6mm-diameter poly washer ❹.
4) Mount the UL arm ❸ to the axle ❼ so that the protrusion ❽ comes into the groove ❾ of the UL brake ❻.
5) Mount the UL gear ❷ to the axle ❼ and engage it with the gear of the drive gear (left) assembly ❿.
6) Install the stopper washer ❶.
7) Mount the switch lever assembly as described in section 3-14.

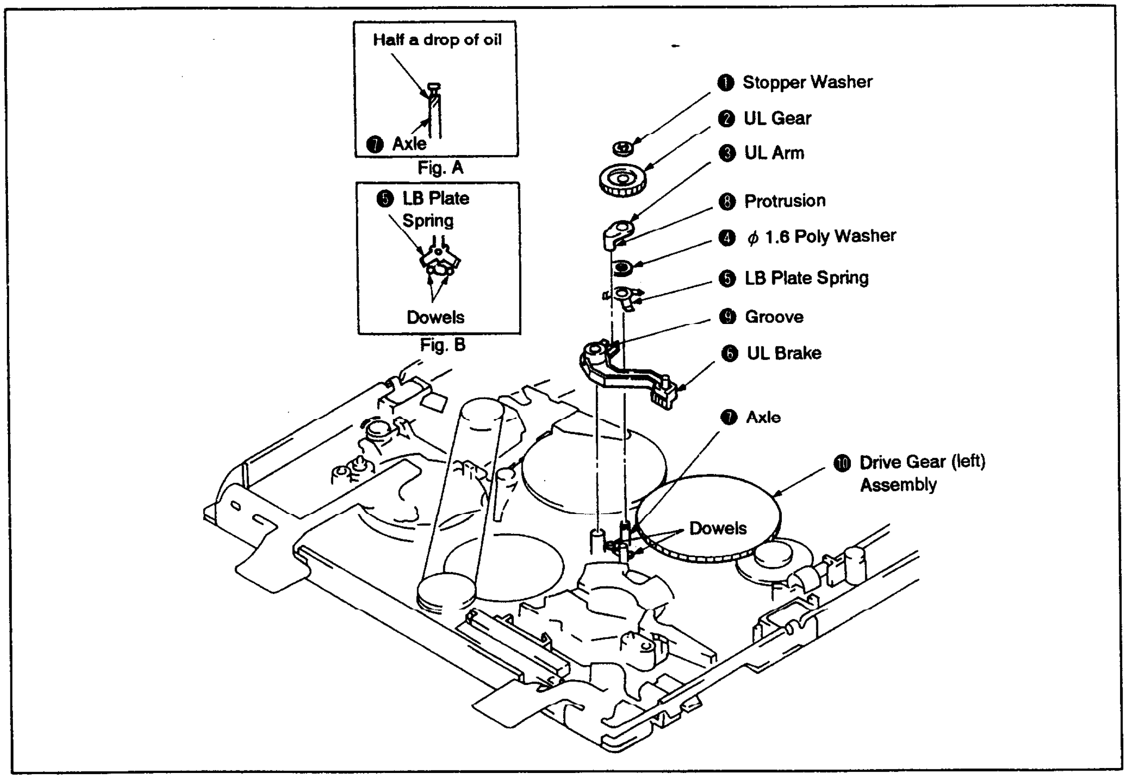

Half a drop of oil
❼ Axle
Fig. A
❺ LB Plate Spring
Dowels
Fig. B
❶ Stopper Washer
❷ UL Gear
❸ UL Arm
❽ Protrusion
❹ ϕ 1.6 Poly Washer
❺ LB Plate Spring
❾ Groove
❻ UL Brake
❼ Axle
❿ Drive Gear (left) Assembly
Dowels

Fig. 3-18.

3-18. COASTER (RIGHT) ASSEMBLY, DRIVE GEAR (RIGHT) ASSEMBLY

1. Removal (See Fig. 3-19.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the drum unit as described in section 3-13.
3) Remove the switch lever assembly as described in section 3-14.
4) Remove the timing belt (L) , the RC gear assembly and the loading lever assembly as described in section 3-15.
5) Set the STOP mode.
6) Remove the screw ❶ , then remove the coaster plate spring ❷ and the coaster (right) assembly ❸ .
7) Remove the two screws ❹ , then remove the reinforcing plate TT ❺ .
8) Remove the stopper washer 1.5 ❻ , then remove the drive gear (right) assembly ❼ .

2. Installation (See Fig. 3-19.)

1) Grease the points of the mechanism chassis shown in Fig A.
2) Apply half a drop of oil to the axle ❽ (See Fig. F).
3) Grease pin ❾ , axle ❿ and dowel ⓮ of the coaster (right) assembly ❸ (See Fig. D).
4) Mount by aligning the pin ❾ and the axle ❿ with the slot ⓫ of the mechanism chassis.
5) Move the brake release arm ⓬ in the direction of the arrow Ⓐ to put it out of the way.
6) Mount the drive gear (right) assembly ❼ to the axle ❽ , and engage it with the drive gear (left) assembly ⓭ as shown in Fig. B.
7) Align the ⓐ part with the ⓑ part, and the hole ⓮ with the pin ❾ of the coaster (right) assembly ❸ .
8) Install the stopper washer 1.5 ❻ .
9) Mount by aligning the coaster plate spring ❷ with the axle ❿ of the coaster (right) assembly ❸ and pin ❾ , then secure with the screw ❶ .
10) Mount the reinforcing plate TT ❺ aligning it with the dowel ⓯, then tighten the two screws ❹ in the indicated order.
11) Grease the points indicated in Figs. C and E.
12) Mount the timing belt (L) , the RC gear assembly and the loading lever assembly as described in section 3-15.
13) Mount the switch lever assembly as described in section 3-14.
14) Mount the drum unit as described in section 3-13.
15) Mount the DC motor (capstan motor) as described in section 3-3.

Note:
- Screw ❶ should be tightened with a tightening torque of approx. 500g•cm. If tightened too much, the coaster (right) assembly ❸ and the coaster plate spring ❷ will be deformed.
- After installing, be sure to perform tape path adjustment as described in section 4.

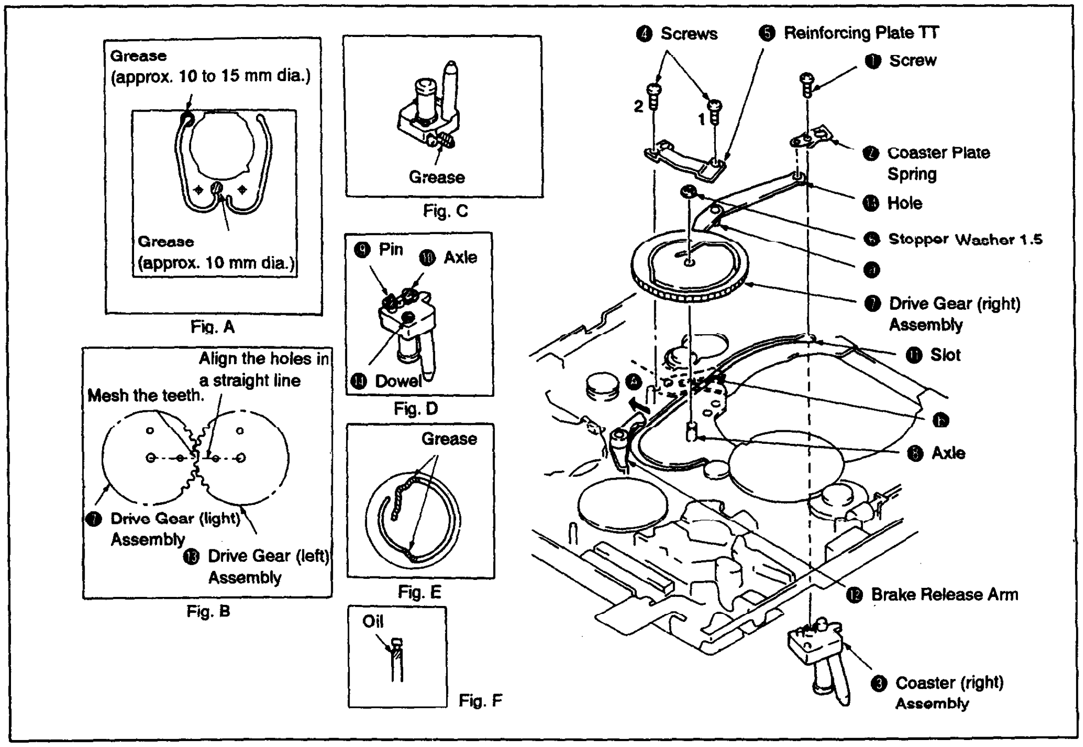

Grease
(approx. 10 to 15 mm dia.)
Grease
(approx. 10 mm dia.)
Fig. A
Align the holes in a straight line
Mesh the teeth.
❼ Drive Gear (light) Assembly
⓭ Drive Gear (left) Assembly
Fig. B
Grease
Fig. C
❾ Pin
❿ Axle
⓮ Dowel
Fig. D
Grease
Fig. E
Oil
Fig. F
❹ Screws
❺ Reinforcing Plate TT
2
1
❶ Screw
❷ Coaster Plate Spring
⓯ Hole
❻ Stopper Washer 1.5
ⓐ
❼ Drive Gear (right) Assembly
⓫ Slot
Ⓐ
ⓑ
❽ Axle
⓬ Brake Release Arm
❸ Coaster (right) Assembly

Fig. 3-19.

3-19. COASTER (LEFT) ASSEMBLY, DRIVE GEAR (LEFT) ASSEMBLY

1. Removal (See Fig. 3-20.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the drum assembly as described in section 3-13.
3) Remove the switch lever assembly and the pinch roller sub-arm assembly as described in section 3-14.
4) Remove the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
5) Remove the coaster (right) assembly and the drive gear (right)assembly as described in section 3-18.
6) Remove the screw ❶ , then remove the coaster plate spring ❷ and the coaster (left) assembly ❸ .
7) Remove the two screws ❹ , then remove the reinforcing plate SS assembly ❺ .
8) Remove the stopper washer 1.5 ❻ , then remove the drive gear (left) assembly ❼ .

2. Installation (See Fig. 3-20.)

1) Grease the points of the mechanism chassis shown in Fig A.
2) Apply half a drop of oil to the axle ❽ (See Fig. E).
3) Grease pin ❾ , axle ❿ and dowel ⓰ of the coaster (left) assembly ❸ (See Fig. B).
4) Mount by aligning the pin ❾ and the axle ❿ with the slot ⓫ of the mechanism chassis.
5) Fit the drive gear (left) assembly ❼ to the axle ❽ , and mount so that the gear engages with the wheel gear ⓭ and the UL gear ⓮ .
6) Align the ⓐ part with the slot ⓫ , and the hole ⓮ with the pin ❾ of the coaster (left) assembly ❸ .
7) Install the stopper washer 1.5 ❻ .
8) Mount by aligning the coaster plate spring ❷ with the axle ❿ and pin ❾ of the coaster (left) assembly ❸ , then secure with the screw ❶ .
9) Mount the reinforcing plate SS assembly ❺ aligning it with the dowel ⓯ , then tighten the two screws ❹ in the indicated order.
10) Grease points indicated in Figs. C and D.
11) Mount the coaster (right) assembly and the drive gear (right)assembly as described in section 3-18.
12) Mount the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
13) Mount the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
14) Mount the drum assembly as described in section 3-13.
15) Mount the DC motor (capstan motor) as described in section 3-3.

Note:
- Screw ❶ should be tightened with a tightening torque of approx. 500g•cm. If tightened too much, the coaster (right) assembly ❸ and the coaster plate spring ❷ will be deformed.
- After installing, be sure to perform tape path adjustment as described in section 4.

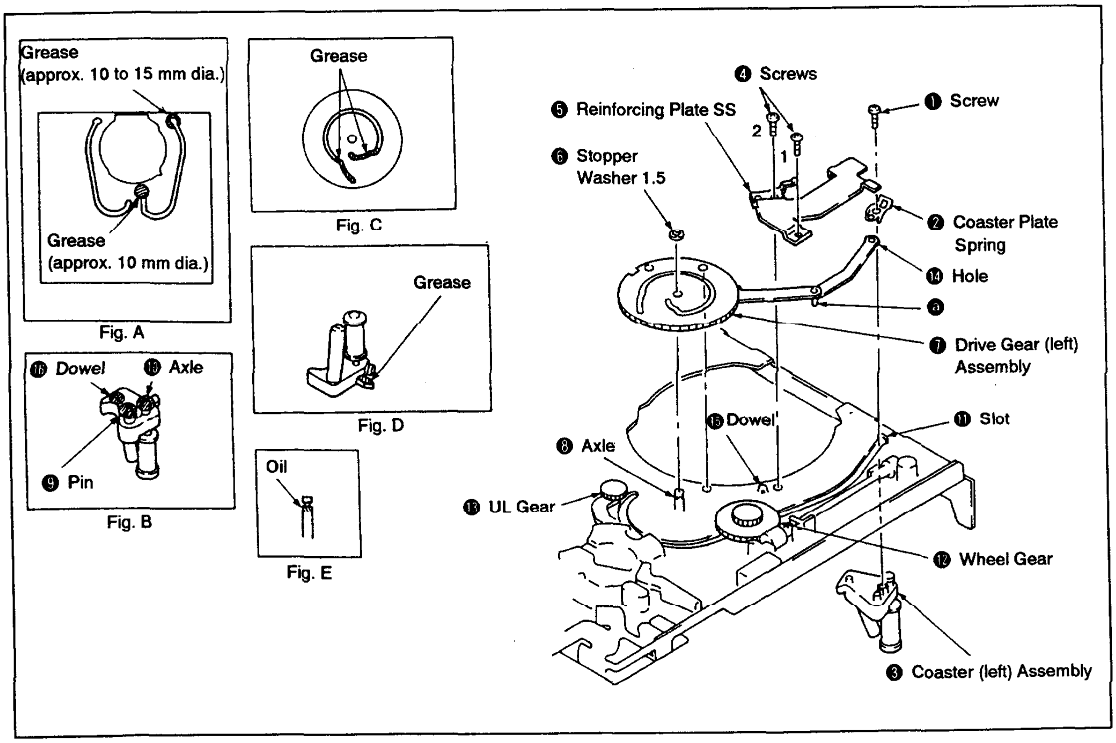

Grease
(approx. 10 to 15 mm dia.)
Grease
(approx. 10 mm dia.)
⓰ Dowel
❿ Axle
❾ Pin
Grease
Grease
Oil
❹ Screws
❺ Reinforcing Plate SS
2
1
❶ Screw
❻ Stopper Washer 1.5
❷ Coaster Plate Spring
⓮ Hole
ⓐ
❼ Drive Gear (left) Assembly
⓯ Dowel
⓫ Slot
❽ Axle
⓭ UL Gear
⓬ Wheel Gear
❸ Coaster (left) Assembly

Fig. A

Fig. B

Fig. C

Fig. D

Fig. E

Fig. 3-20.

3-20. LOADING MOTOR, BRAKE RELEASE ARM, WHEEL GEAR, WORM ASSEMBLY

1. Removal (See Fig. 3-21.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
3) Remove the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
4) Remove the drive gear (right) assembly as described in section 3-18.
5) Remove the drive gear (left) assembly as described in section 3-19.
6) Remove the two screws ❶, then remove the loading motor assembly ❷.
7) Remove the brake release arm ❸.
8) Remove the stopper washer ❹, then remove the wheel gear ❺.
9) Remove the worm assembly ❻ from the six claws ❼.

2. Installation (See Fig. 3-21.)

1) Mount the worm assembly ❻, matching it to the six claws ❼.
2) Grease the shaded parts of the worm assembly ❻ (five places) (see Fig A).
3) Apply half a drop of oil to the axle ❽ (See Fig. B).
4) Fit the wheel gear ❺ to the axle ❽ and engage it with the gear of the worm assembly ❻.
5) Mount the brake release arm ❸.
6) Grease the whole perimeter of the gear of the loading motor assembly ❷.
7) Align the loading motor assembly ❷ with the mechanism chassis and secure it with the two screws ❷.
8) Mount the drive gear (left) assembly as described in section 3-19.
9) Mount the drive gear (right) assembly as described in section 3-18.
10) Mount the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
11) Mount the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
12) Mount the DC motor (capstan motor) as described in section 3-3.

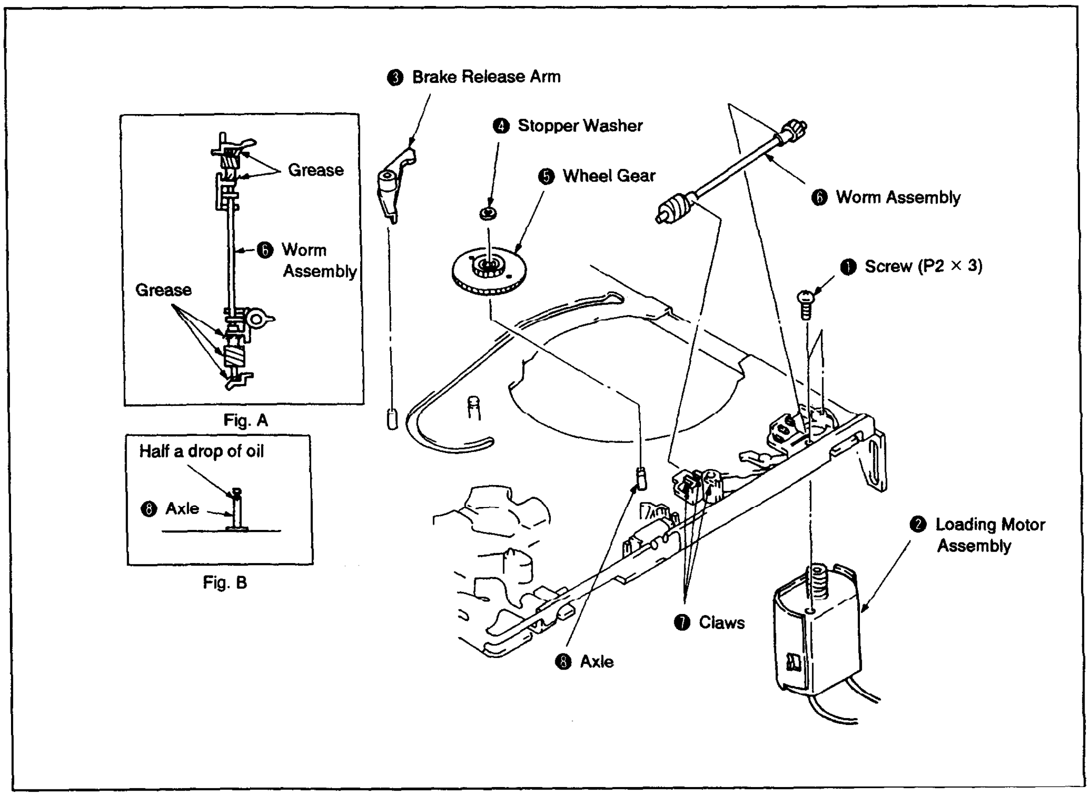


Fig. A

Fig. B

Fig. 3-21.

3-21. ROTARY UPPER DRUM REPLACEMENT

1. Removal

- If possible, make a recording before removal.

1) Detach the six solderings ⓐ, then use a pair of tweezers or the like to confirm that the terminals passing through the board holes from below can move freely.
2) Remove the two screws ❶ (See Fig. 3-22).
3) Mount the jig ❹ (Ref. No. J-7) with the two supplied screws ❷, then screw the attached hexagon socket screws ❸ to the jig ❹. The rotary upper drum ❺ will move upward and come off (See Fig. 3-23).

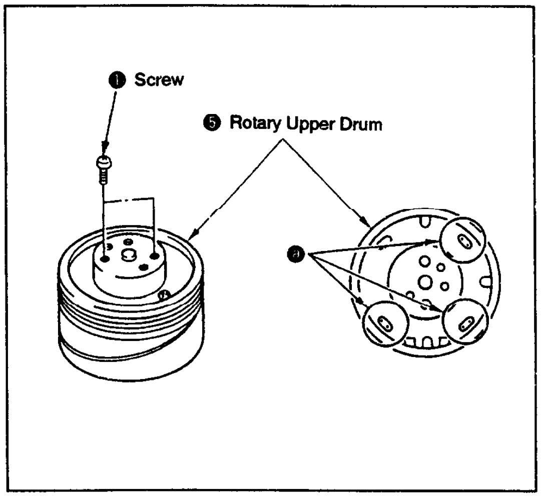


Fig. 3-22.

2. Installation

1) Wipe clean the flange surface and the rotary upper drum ❺ surface that makes contact with it, and confirm that they are free from dirt and scratches.
2) Insert the jig ❼ (Ref. No. J-7) into the drum positioning hole, then set the rotary upper drum ❺ by passing the jig through its positioning hole ❻.
   Note: Confirm that the terminals ❽ protrude slightly from the rotary upper drum board holes (See Fig. 3-24).
3) Remove the jig ❼ and push down the rotary upper drum ❺ gently by hand. If it does not go all the way down, secure it temporarily by tightening the two hexagon socket screws ❶ alternately.
4) Insert the jig ❼ into the positioning hole ❻ again and confirm that it goes in smoothly. If it does not, loosen the two screws ❶, repeat step 3 of the Removal paragraph and restart the setting procedure.
5) Tighten the screws ❶.
6) Solder the terminals ❽ (ⓐ in Fig. 3-22).
   Note: Take care that no solder flows below the board.

Note: After installing, be sure to perform tape path adjustment as described in section 4.

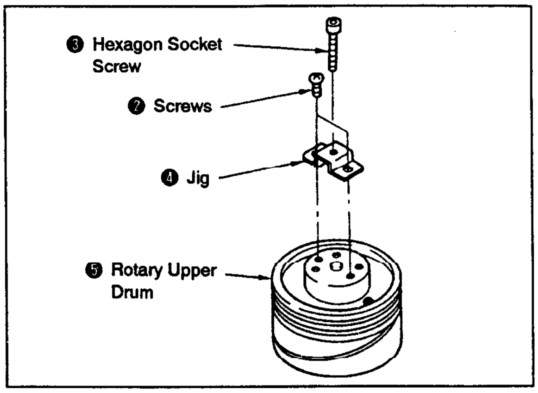


Fig. 3-23.

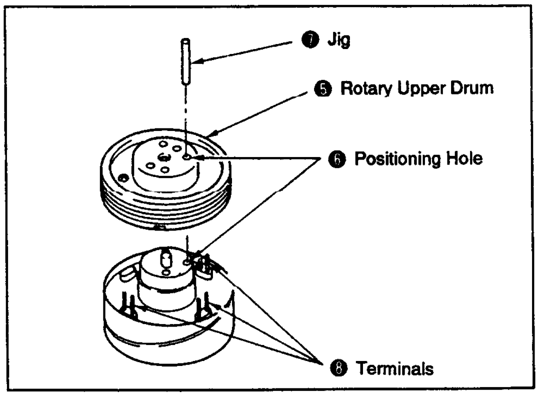


Fig. 3-24.

3-22. FWD BACK TENSION (See Fig. 3-25.)

1) Set the torque cassette (Ref. No. J-6).
2) Set the FWD mode and confirm that S reel table torque value is within 9 to 13 g•cm.
3) If the torque value does not meet the specification, adjust the adjust arm ❶.

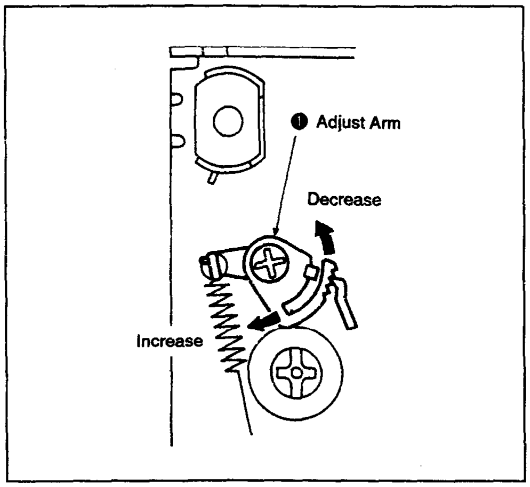


Fig. 3-25.

3-23. REEL TORQUE CHECK

1) Set the torque cassette.
2) Set the FWD mode and confirm that T reel table torque value is within 7 to 15 g•cm.
3) Set the REV mode and confirm that S reel table torque value is within 29 ± 6 g•cm.
4) Set the REV mode and confirm that T reel table torque value is within 13 to 25 g•cm.
5) If a torque value does not meet the specifications above, replace the corresponding reel table.

4. TAPE PATH ADJUSTMENT

[The Track Shift Mode]

In the 8 mm video system, instantaneous tape speed control is performed using four kinds of pilot signals, and high-precision tracking is achieved through the ATF (Automatic Track Finding) system. This makes a tracking control knob unnecessary and allows for precise tracing.

On the other hand, however, tape path adjustment presents some difficulties when the ATF system is used. Namely, since the ATF system will automatically compensate to some degree for head tracing errors, thorough adjustment is not possible.

This can be solved by setting the track shift mode for tracking fine adjustment. ATF will be compulsorily activated, shifting the tracking amount by a fixed amount (approx. 1/4) and thus making tracking fine adjustment easy. Furthermore, no track shift jigs are required.

4-1. TRACK SHIFT MODE SETTING

[Setting Procedure]

- Connect the TEST A and TEST B terminals to the COM terminal.

  Example:
  NTSC ········ GV-8
  PAL ·········· GV-8E

  Connect Pins ① and pin ③ of CN017 on the { SV-34 board (GV-8) / SV-35 board (GV-8E) } to pin ② of it. (See Fig. 4-1)

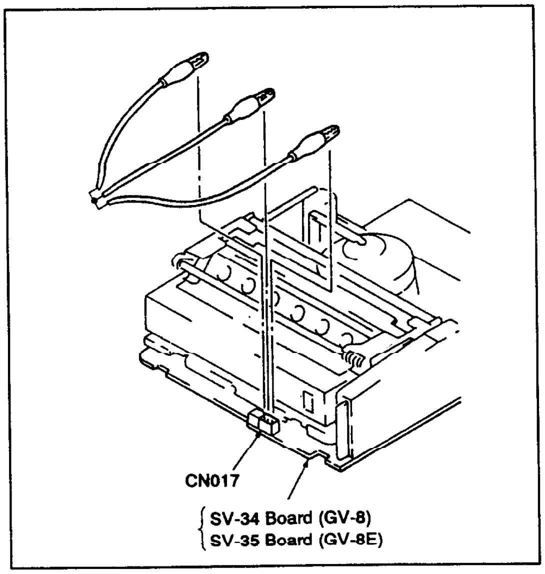
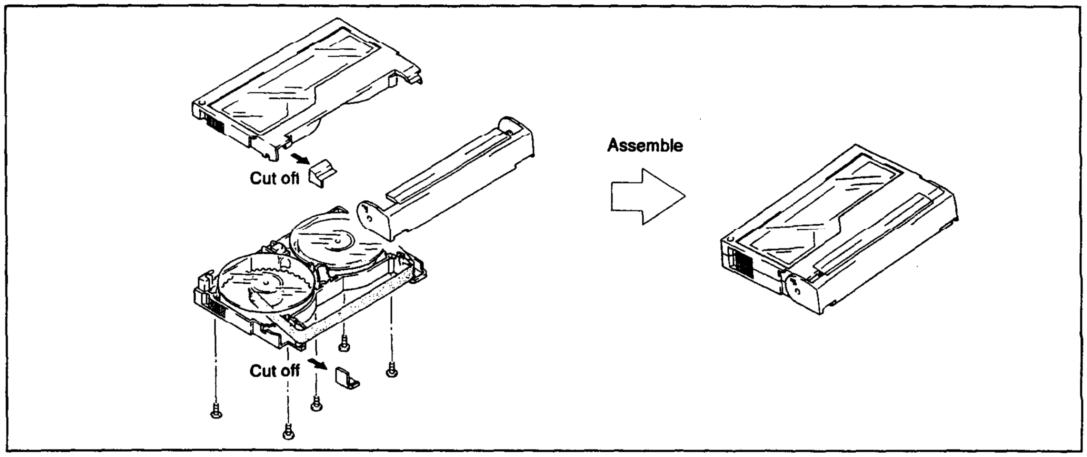


Fig. 4-1.

[Note on Adjustment of No.7 Guide (TG-7)]

The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig. 4-2).
Therefore, when performing section 4-6. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-5), modified as follows, and perform adjustment in playback mode.


Cut off
Cut off
Assemble

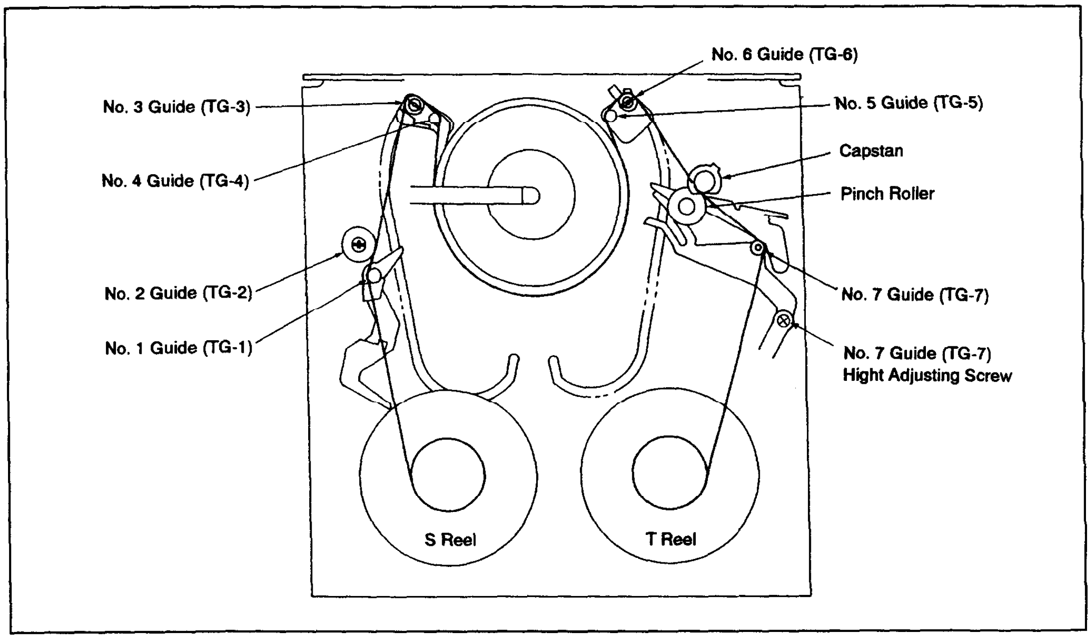
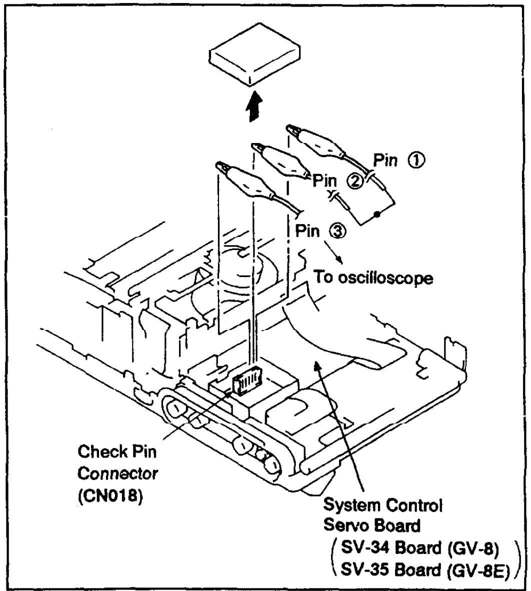

No. 6 Guide (TG-6)
No. 3 Guide (TG-3)
No. 5 Guide (TG-5)
Capstan
No. 4 Guide (TG-4)
Pinch Roller
No. 2 Guide (TG-2)
No. 7 Guide (TG-7)
No. 1 Guide (TG-1)
No. 7 Guide (TG-7)
Hight Adjusting Screw
S Reel
T Reel

Fig. 4-2.

4-2. PREPARATIONS FOR ADJUSTMENT

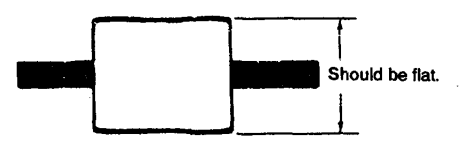
1) Clean tape path surfaces (tape guides, drum, capstan shaft, pinch roller) (See Fig. 4-2).
2) Connection of oscilloscope and output method of waveform.
   CH 1: RF signal output of the drum head (V RF OUT)
   Method for signal output:
   Short-circuit the external trigger output (RF SW. P) and GND.

   Example:
   NTSC ····· GV-8
   PAL ······· GV-8E
   CH 1: Pin ③ (V RF OUT) of CN018 on the
   { SV-34 board (GV-8)
   { SV-35 board (GV-8E)
   Method for signal output:
   Short-circuit pin ① (GND) and pin ② (RF SW.P) of CN018 on the
   { SV-34 board (GV-8)
   { SV-35 board (GV-8E)
3) Play back the alignment tape for tracking adjustment (Ref. No. J-5).
4) Confirm that both the entrance and exit side RF waveforms of the oscilloscope are flat (See Fig. 4-4). If they are not, adjust as follows.



Pin ①
Pin ②
Pin ③
To oscilloscope
Check Pin Connector (CN018)
System Control Servo Board
SV-34 Board (GV-8)
SV-35 Board (GV-8E)

Fig. 4-3.



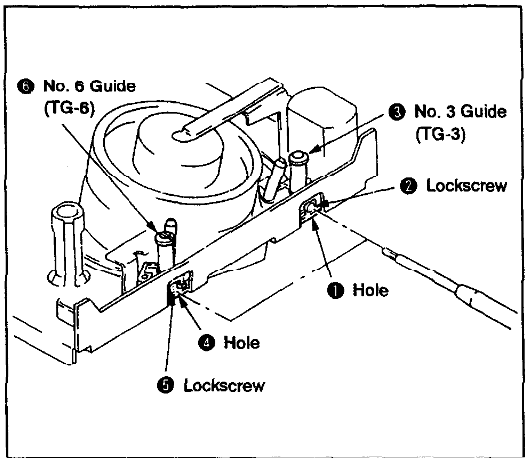
Should be flat.

Fig. 4-4.

4-3. TRACKING ADJUSTMENT (See Fig. 4-5.)

1) Play back the alignment tape for tracking adjustment.
2) Pass a hexagonal wrench, screwdriver (Ref. No. J-11) or the like through the hole ❶, loosen the lockscrew ❷ a little, then make the entrance side waveform flat by turning the No. 3 guide (TG-3) ❸.
3) Pass a hexagonal wrench, screwdriver or the like through the hole ❹, loosen the lockscrew ❺ a little, then make the exit side waveform flat by turning the No. 6 guide (TG-6) ❻.

Note: Take care not to loosen lockscrews too much, since guides come loose easily.



❻ No. 6 Guide (TG-6)
❸ No. 3 Guide (TG-3)
❷ Lockscrew
❶ Hole
❹ Hole
❺ Lockscrew

Fig. 4-5.

4-4. TRACKING FINE ADJUSTMENT (See Figs. 4-5. and 4-6.)

1) Play back the alignment tape for tracking adjustment and set the track shift mode.
2) Confirm whether the waveform is flat. If it is not, turn the No. 3 (TG-3) and No. 6 (TG-6) guides so that it becomes flat.
3) Fix the No. 3 guide ❸ by tightening its lockscrew ❷. Then confirm that the entrance side waveform has not changed.
4) Fix the No. 6 guide ❻ by tightening its lockscrew ❺. Then confirm that the exit side waveform has not changed.

Note: The set screws ❷ and ❺ should be tightened with a tightening torgue of approx. 200g•cm ± 10%.
If tightened too much, there is danger of damaging the thread.

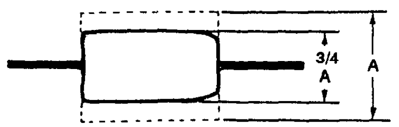


Fig. 4-6.

4-5. No. 2 GUIDE (TG-2) ADJUSTMENT

When the No. 2 guide has been turned or replaced, perform height presetting before this adjustment.

4-5-1. No. 2 Guide (TG-2) Height Presetting (See Fig. 4-7.)

1) Adjust the height from the mechanism chassis upper surface to the TG-2 upper flange ❶ upper surface to 18.6 mm by rotating the TG-2 upper flange ❶.

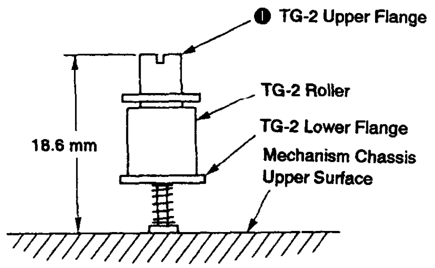


Fig. 4-7.

[Reference]
This U mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7). To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.

Guide	Guide adjustment	Rotating direction of adjustment screw
TG-2, 3, 6	Raise	Counterclockwise
	Lower	Clockwise
TG-7	Raise	Counterclockwise
	Lower	Clockwise

4-5-2. No. 2 Guide (TG-2) Adjustment (See Figs. 4-8. and 4-9.)

1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
2) Confirm that the tape is not bent at the lower flange ❷ of the No. 2 guide (TG-2) ❶ (See Fig. 4-8). If it is, turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ clockwise with a screwdriver, lowering it until the tape is straightened.
3) Play back the alignment tape for tracking adjustment.
4) Perform tracking adjustment and tracking fine adjustment as described in sections 4-3. and 4-4.
5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
6) If the waveform is not normal (See Fig. 4-9), turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ 90° counter-clockwise and repeat step 5.

   Repeat steps 5 and 6 until a normal waveform is obtained. Then, confirm that the tracking waveform has not changed. If it has, perform fine adjustment of entrance side tracking and repeat step 5.

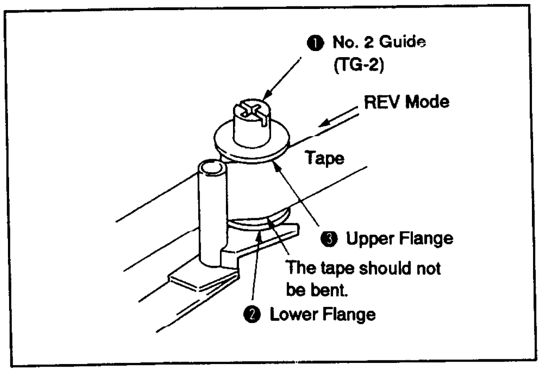

❶ No. 2 Guide (TG-2)
REV Mode
Tape
❸ Upper Flange
The tape should not be bent.
❷ Lower Flange

Fig. 4-8.

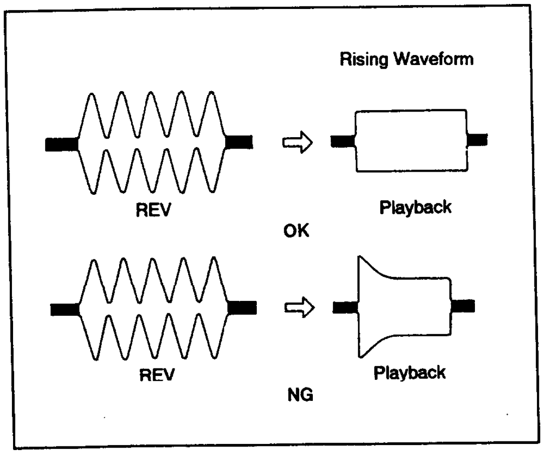

Rising Waveform
REV
OK
Playback
REV
NG
Playback

Fig. 4-9.

4-6. No. 7 GUIDE (TG-7) ADJUSTMENT (See Fig. 4-10.)

1) Play back the alignment tape for tracking adjustment and set the REV mode.
2) Confirm that the tape is not bent between the No. 6 guide (TG-6) ❶ and the capstan ❷. If it is, turn the hight adjusting screw ❹ of the No. 7 guide (TG-7) ❸ until the tape is straightened.
3) Set the playback mode again and confirm that the tape is not bent between the capstan ❷ and the hight adjusting screw ❹ of the No. 7 guide (specification:0.5 mm or less). If the tape is bent beyond the specification, turn the No. 7 guide (TG-7) ❸ until bending is within the specification (0.5 mm).

   If in the REV mode tape bending between the No. 6 guide (TG-6) ❶ and the capstan ❷ is 0.3 mm or less, adjustment can be considered completed.

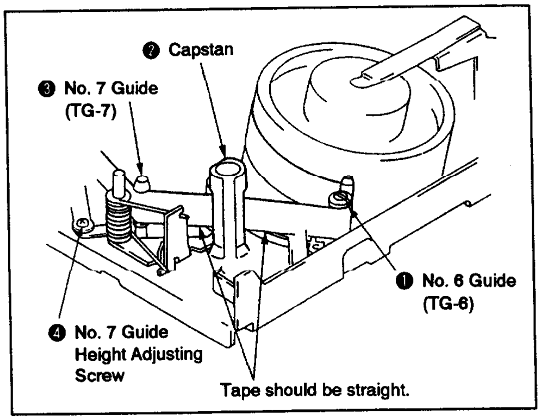

❷ Capstan
❸ No. 7 Guide (TG-7)
❶ No. 6 Guide (TG-6)
❹ No. 7 Guide Height Adjusting Screw
Tape should be straight.

Fig. 4-10.

4-7. CUE AND REV WAVEFORM CHECK (See Fig. 4-11.)

1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (See Fig. 4-11). In case pitch is not constant, perform section 4-4. Tracking Fine Adjustment and section 4-6. No. 7 Guide Adjustment.
2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (See Fig. 4-11). Otherwise, perform section 4-4. Tracking Fine Adjustment.

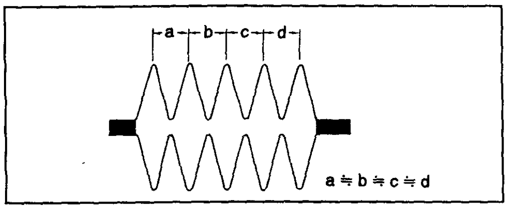


Fig. 4-11.

4-8. CHECK AFTER ADJUSTMENT

4-8-1. Tracking Check

1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (See Fig. 4-12).
2) Then, confirm that the minimum amplitude value (EMIN) is 65% of the maximum value (EMAX) or larger (See Fig. 4-13).
3) Confirm that no large fluctuations occur on the waveform (See Fig. 4-14).

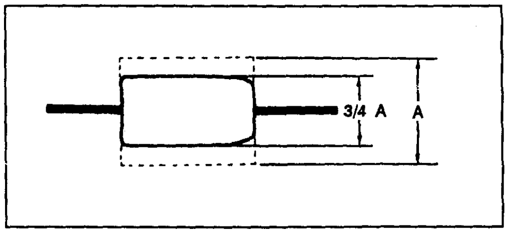


Fig. 4-12.

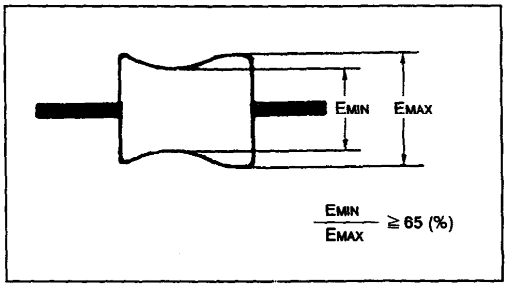


Fig. 4-13.

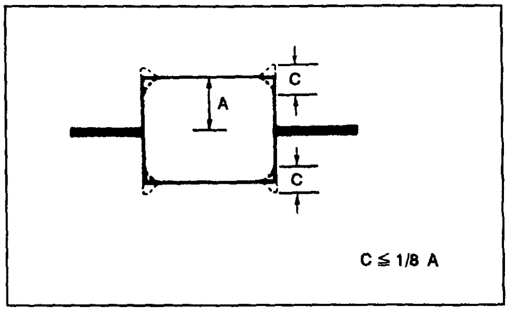


Fig. 4-14.

4-8-2. Rising Check (See Fig. 4-15.)

1) Play back the alignment tape for tracking adjustment.
2) Cancel the track shift mode.
3) Eject the tape, then load it again.
4) Set the playback mode and confirm that the RF waveform rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller (See Fig. 4-15).
5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
6) Repeat steps 3) to 5) once more.

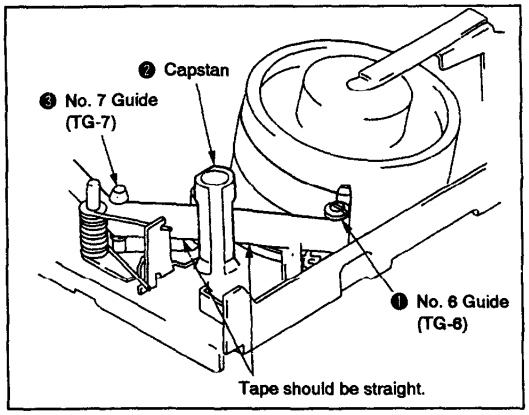

❷ Capstan
❸ No. 7 Guide (TG-7)
❶ No. 6 Guide (TG-6)
Tape should be straight.

Fig. 4-15.

4-8-3. Tape Path Check (See Fig. 4-16.)

1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3 mm, at the lower flange of the No. 2 guide, the upper flange of the No. 3 guide, the upper flange of the No. 6 guide and the No. 7 guide upper and lower flanges.
2) Confirm that no tape rising occurs and that curling is less than 0.3 mm at the flanges of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.

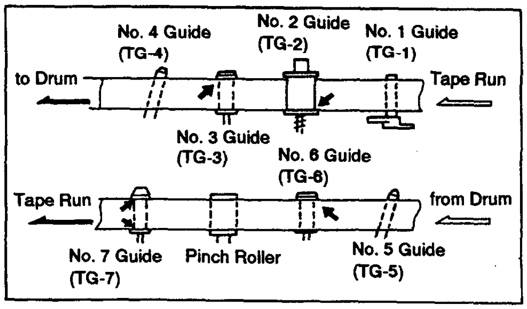

No. 4 Guide (TG-4)
No. 2 Guide (TG-2)
No. 1 Guide (TG-1)
to Drum
Tape Run
No. 3 Guide (TG-3)
No. 6 Guide (TG-6)
Tape Run
from Drum
No. 7 Guide (TG-7)
Pinch Roller
No. 5 Guide (TG-5)

Fig. 4-16.